

When investors meet consumers: The roles and interactions of different backers in the crowdfunding market

Feiqiong Wei¹  | Yinliang (Ricky) Tan²  | Haibing Gao³  | Huazhong Zhao⁴ 

¹School of Economics & Management,
Department of Marketing, Nanjing Tech
University, Nanjing, China

²C.T. Bauer College of Business, Department of
Decision & Information Sciences, University of
Houston, Houston, Texas

³Department of Marketing, School of Business,
Renmin University of China, Beijing, China

⁴Department of Marketing, City University of
Hong Kong, Hong Kong, China

Correspondence

Haibing Gao, Department of Marketing, School of
Business, Renmin University of China, Room
908A, Mingde Business Building, No. 59
ZhongGuanCun Street, Beijing, China, 100872.
Email: haibing_gao@ruc.edu.cn

Abstract

By harnessing the power of the crowd, crowdfunding has changed the way startup ventures, innovation-minded entrepreneurs, and private individuals raise capital. Reward-based crowdfunding is an established and attractive fundraising option for entrepreneurs with creative projects, while investment-based crowdfunding has also gained popularity thanks to the progress of related regulations. Both types of crowdfunding are drawing a growing number of startups that seek funding opportunities, although backers on different types of crowdfunding platforms exhibit distinct motivations. Understanding the behavior and interaction of different types of backers is thus critical for a startup to launch a successful crowdfunding campaign across distinct platforms.

To address this issue, we conduct a field study on a popular crowdfunding platform, where each campaign offered both reward- and investment-based funding. Interestingly, we find a positive relationship between investor contributions in the early stage of the campaign and the likelihood of the campaign's success. Our empirical analysis reveals that investor–consumer interaction mediates the main effect of early investor contributions. Moreover, the positive main effect is stronger when a larger amount of project-relevant information is released and when a higher level of customization (using price discrimination or product differentiation) is offered in reward-based funding options. These results are consistent with several robustness checks. Our findings provide relevant managerial implications for entrepreneurs and valuable insights regarding platform design.

KEY WORDS

backers' interaction, crowdfunding, investment-based, platform design, reward-based

1 | INTRODUCTION

"This bill (Jumpstart Our Business Startups Act) is a potential game changer.... For the first time, ordinary Americans will be able to go online and invest in entrepreneurs that they believe in."

— Barack Obama, 44th president of the United States (2016)

Crowdfunding has reshaped the way startup ventures, innovation-minded entrepreneurs, and private individuals raise capital and has become an important alternative to conventional sources of financing (i.e., traditional angel investors, banks, and venture capital) by harnessing the

power of the crowd. Technology has enabled crowdfunding platforms to decentralize the traditional funding channels by bringing together entrepreneurs and backers in need of finance. On one side, entrepreneurs submit their creative idea to the crowdfunding platform for funding, while on the other, crowdfunding backers decide which project to support in exchange for either a new product or a financial reward. The crowdfunding market has been experiencing explosive growth and is expected to continue growing at 4.4% annually and reach 1.3 billion USD in 2028 (Bloomberg, 2022).

There are two major forms of crowdfunding: reward-based and investment-based. The reward-based type involves offering a gift, acknowledgment, or early access to an innovative product in exchange for a donation or purchase during the crowdfunding campaign (Agrawal et al., 2015).

Reward-based campaigns have become popular since the prominent crowdfunding platforms Indiegogo and Kickstarter were founded in 2008 and 2009, respectively.

The investment-based type requires investment from the backers in the form of either a debt or equity stake. In debt crowdfunding, the backers receive a debt instrument that pays interest returns, while in equity-type crowdfunding, the backers receive a small percentage of equity in the startup (Ge et al., 2017; Kim & Viswanathan, 2019; Lin et al., 2013). Investment crowdfunding is a relatively new funding method, with the Jumpstart Our Business Startups (JOBS) Act in 2015 clearing the regulatory roadblocks from investment crowdfunding and enabling these platforms to flourish.¹

We have observed two emerging practices with the rise of crowdfunding platforms. First, platforms provide a referral link for their users and campaigns. StartEngine, for one, provides its users with a referral link to find prospective investors,² while Kickstarter³ and Indiegogo⁴ also use the referral link to help entrepreneurs promote their campaigns successfully. Entrepreneurs on Kickstarter also use referral tags to see which external sites bring backers to their project page, as well as to see the number of successful backings generated from a particular link (Atwell, 2017). Referral tags are icons appearing on the left-hand side of a project's page which backers click to share the crowdfunding campaign on their social media home pages. Kickstarter and Indiegogo both provide these icons for backers to share referral links about campaigns on social media tools such as Facebook and Twitter.

The second emerging practice we notice has to do with entrepreneurs seeking funding opportunities from both reward- and investment-based campaigns simultaneously. For example, with their innovation to reconfigure pen-enabled Mac tablet computers, Modbook successfully raised \$318,244 on Kickstarter, using reward-based campaigns, and an additional \$186,720 through investment-based crowdfunding platform Wefunder.⁵ The dairy-free coffee creamer Nutpods likewise successfully launched a crowdfunding campaign on Kickstarter and also leveraged the investment-based crowdfunding platform CircleUp to expand their business.⁶ Similarly, to fund its smart speaker music systems, Como Audio also used both reward- and investment-based crowdfunding campaigns to launch their products.⁷ Original reward- or investment-based crowdfunding platforms also permit a campaign to use two types of crowdfunding simultaneously. Fig, an equity crowdfunding platform

¹ <https://www.sec.gov/news/pressrelease/2015-249.html>.

² <https://www.startengine.com/referral-program/picasso>.

³ <https://help.kickstarter.com/hc/en-us/articles/115005138933-How-do-I-create-a-custom-referral-tag-and-track-referral-stats->.

⁴ <https://support.indiegogo.com/hc/en-us/articles/217774718-Tracking-Referrals-Using-Custom-URLs>.

⁵ <https://www.kickstarter.com/projects/modbook/modbook-pro-x-154-retina-quadracore-mac-os-x-tablet>; <https://wefunder.com/modbook>.

⁶ <https://www.kickstarter.com/projects/1080688617/nutpods-naturally-nutty-non-dairy-creamier-for-on-t>. <https://meridianllc.com/press-releases/nutpods-raises-series-b-growth-equity-raise-circleup/>.

⁷ <https://wefunder.com/como.audio> and <https://www.indiegogo.com/projects/speakeasy-stereo-system-by-como-audio/>.

for games, has mixed traditional reward-based crowdfunding with equity investment (Hall, 2017). In Fig campaigns, backers can get products such as T-shirts or a copy of the game from reward-based crowdfunding. They can also invest in the game, with returns based on revenue generated by game sales.⁸ Despite their different approaches, popular crowdfunding platforms like Indiegogo (reward-based crowdfunding) and StartEngine (equity-based crowdfunding) collaborate and share their enormous community of backers (Indiegogo, 2022).

The above strategic innovations have prompted investigation into the interaction between backers in a campaign with both reward- and investment-based crowdfunding. Scholars (e.g., Agrawal et al., 2015; Lukkarinen et al., 2016) classify two major motivations to fund an innovative project: (1) to pursue an investment return and (2) to consume the crowd-funded product. We define backers with the first motivation as *investors*, and backers with the second as *consumers*.⁹ Understanding how different types of backers (i.e., investors and consumers) interact is critical for the success of hybrid crowdfunding campaign.

To confirm the prevalence of hybrid crowdfunding and refine our research questions, we talked with practitioners (entrepreneurs and platform managers) as well as investors and highlighted their major comments. The first interviewer is a founder and CEO of a tech firm who states that more and more entrepreneurs are collecting their maximum funding amount by conducting campaigns on both reward- and investment-based platforms. He supposes that reward-based and equity-based platforms work better if combined, because startups can create a consumer base and investor base at the same time. He also highlights the differences in backer behaviors on reward- and investment-based crowdfunding platforms, noting how backers on investment-based crowdfunding platforms are adept at gathering and interpreting information. These backers learn everything they can about the startups from a variety of channels like newspapers and industrial publications, even attempting to engage directly with the startup's founders. Backers on reward-based crowdfunding platforms, meanwhile, seldom engage in such activities. Their concerns are basically product-related (i.e., quality and price), and their product preferences and price sensitivity are heterogeneous.

We then conduct a series of interviews with a manager who has worked for both reward-based and investment-based crowdfunding platforms. He mentions that a crowdfunding platform should be more than simply a location to gain investment return or support a product, believing that there is a great deal of overlap between different types of crowdfunding. For

⁸ <https://www.fig.co/invest>.

⁹ We acknowledge that there may exist other motivations in crowdfunding campaigns. For example, campaigns for public good or charity may attract backers with altruism motivation (Burtsch et al., 2013). However, in our research setting and in many other mainstream crowdfunding platforms, projects are created for the purpose of raising capital to support development of an innovative product. As a result, it is appropriate to categorize the backers mainly into investors and consumers. Considering a more delicate classification of the motivations can become an interesting direction for future studies.

this reason, different types of crowdfunding platforms may want to consider teaming up.

We also interview senior investors, who have supported over one hundred startups. According to these experts, in order to maximize investment return, investors tend to promote projects on their social media and persuade people in their networks to become consumers. They also emphasize that having sufficient information is critical for optimal decision-making and consider information from any channel potentially relevant to their product. Efficient culling of more project-relevant information could help these senior investors predict the popularity of crowdfunded products in the consumer market. They also point out that they are more likely to support campaigns with more options among products for crowdfunding, because they could easily find fits for their social networks.

To reiterate, although entrepreneurs and platforms both desire to utilize multiple types of crowdfunding simultaneously, it is not known whether different types of backers will behave differently in this kind of hybrid crowdfunding. Nor is it known whether different types of backers interact with each other to jointly determine crowdfunding success. Inspired by the emerging practice of hybrid crowdfunding, our research aims to address the following research questions. (1) Do backers with different motivations (i.e., investors or consumers) exhibit different funding behavior during the dynamic process of crowdfunding? (2) How does the interaction between different types of backers influence the campaign's success? Our conversations with industry experts and experienced investors confirm that a systematic investigation into hybrid crowdfunding is timely and valuable to the industry.

We conducted a field study on a popular crowdfunding platform from July 2017 to December 2017. Campaigns launching on this platform use hybrid crowdfunding, offering backers the option of both reward- and debt-based funding. In the reward-based funding option, backers will receive a reward (i.e., access to a new product in most cases) from the entrepreneurs for backing the project. In the investment-based funding option, backers will receive a specified interest payment after investing in the debt instrument supporting the crowdfunding campaign. Leveraging this unique data set, we are able to understand the dynamic interactions between backers with different motivations (i.e., investors and consumers) on the crowdfunding platform. To the best of our knowledge, we believe our article to be the first to explore this interplay, and as such it provides important managerial implications toward optimizing the design and operation of crowdfunding platforms.

Our empirical results show a positive relationship between early investor contribution and the likelihood of a crowdfunding campaign's success. We propose two reasons to explain this finding. First, early investors can better predict crowdfunding success. Second, early investors willingly assume the role of sales agents to solicit purchases by potential consumers of reward-based crowdfunding. We also capture two positive moderators: (1) the release of project-relevant

information strengthens the main effect of early investor contributions, and (2) the role of early investor contribution on the likelihood of a campaign's success is stronger when a higher level of customization (using price discrimination or product differentiation) is offered in reward-based funding options. We find that in successful campaigns, more customized options like price and quantity discounts are provided and consumer choices are evenly distributed among them.

Overall, our findings provide valuable insights for entrepreneurs seeking capital from different types of crowdfunding backers. In order to encourage early contribution from investors, entrepreneurs should begin by disseminating more project- and innovation-relevant information in a timely manner, and then also customize reward-based options for their crowdfunding campaigns. From the perspective of crowdfunding platform design, different types of platforms (investment-based and reward-based) can collaborate, coordinating their crowdfunding options and mutually designing policies to maximize profits.

The rest of the article is organized as follows. In the next section, we briefly review the related literature and highlight our contributions in respect to previous studies. In Section 3, we introduce the relevant theories and develop our hypotheses. In Section 4, we introduce the research context and data. In Section 5, we conduct our empirical analysis along with several robustness checks, while the article concludes with managerial implications and possible avenues for future research in Section 6.

2 | LITERATURE REVIEW

Our study has points of contact with the crowdfunding literature focusing on early investor behavior, economics of information and social influence, and market mechanism design, but it also deviates from the existing literature in some crucial aspects.

To begin with, our article adds directly to the growing literature on crowdfunding. Some relevant studies (e.g., Burtch et al., 2013; Hu et al., 2015; Lin & Viswanathan, 2016; Liu et al., 2022) examine the funding patterns of backers, pure consumers and pure investors, while others (e.g., Gerber & Hui, 2013; Mollick, 2014) classify crowdfunding motivations without suggesting how to address the heterogeneity of funding motivations in a single crowdfunding campaign. In contrast, because our study is situated in the crowdfunding market, where heterogeneity in funding motivations commonly exists, it offers multiple funding forms to address such heterogeneity. We examine how backers with different motivations exhibit different funding behaviors and thus asymmetrically influence crowdfunding outcomes. Our article is more closely related to the recent research into early investor behavior in crowdfunding. According to Agrawal et al. (2015) where a backer assumes the simultaneous role of investor and consumer, early investors tend to be friends and family of the entrepreneurs and thus have access to private

information about the crowdfunding project. Our research setting complements the above example in the way we show that investors and consumers are separated by the different forms of crowdfunding offered, and with our finding that early investors can strengthen their predictive abilities by tapping into publicly available information.

Turning the focus to the motivations of the pure investor, two other studies consider crowdfunding marketplace behavior from this perspective. According to Zhang and Liu (2012), early investors may possess private information and herd rationality, while Kim and Viswanathan (2019) argue that participation of experienced early investors is an informational signal that can influence the decisions of later investors. Our article differs from the above in three regards: (1) we examine the funding behaviors of *both investors and consumers as well as their interactions*, (2) we capture *early investors' information advantage against early consumers*, and (3) we find that the influence of early investors comes by way of a different mechanism, *the persuasion effect on potential consumers*.

Our research is also relevant to the literature on the economics of information and social influence. This body of research includes the role of information on prior contributions (Burtch et al., 2013), the extent of informativeness of crowdfunding campaigns (Roma et al., 2018), online friendships between borrowers (Lin et al., 2013), social media activity of campaign organizers and prior contributors (Hong et al., 2018), eWOM (Thies et al., 2016), firm-initiated response (Kumar et al., 2018), fake social information (Wessel et al., 2016), distribution of firm-released information to brand communities (Bapna et al., 2019), and lender-borrower communication (Xu & Chau, 2018). Our findings contribute the following novel insights to these previous studies: (1) Investors can appreciate even public information from entrepreneurs and herd around promising crowdfunding projects early and (2) early investors exhibit informational and social influence by informing and persuading consumers.

Finally, our article intersects with the literature of market mechanism design. Recent research has examined mechanism design in crowdfunding markets (e.g., Burtch et al., 2015; Burtch et al., 2018; Cai et al., 2017; Wei & Lin, 2017). Our research adds to this body by identifying an interesting mechanism in the crowdfunding market where heterogeneous motivations can be accommodated. Under the all-or-nothing mechanism, our crowdfunding model specifies that (1) consumers and investors contribute jointly toward the same funding goal, and (2) the source of investment return is sales revenue from consumer backers. Under these specifications, early investors have a strong incentive to recruit consumers. The market design to encourage interactions between different crowd-funders is largely ignored, with one notable exception. Cai et al. (2017) consider donation-based options in reward-based crowdfunding and find that an increase in donations can positively spill over to reward-based contributions. Our study differs from Cai et al. (2017) in two aspects: (1) our empirical setting considers another major motivation (i.e., investment return) and offers investment-based funding

options accordingly and (2) the mechanism of backer interactions in our model is also different: Early investors act as sales agents to persuade potential consumers to make purchases. In particular, the platform can track the process of persuasion, that is, interactions with consumers initiated by early investors, as well as the results of persuasion, like the number of consumers referred by early investors.

3 | THEORY AND HYPOTHESES

In this section, we identify and present theories that support the subsequent formulation of our hypotheses. We propose that early investors contribute to a campaign's success. This positive effect is attributed to (1) early investors' prediction ability and (2) early investors' actual influence on crowdfunding success. In the following discussion, we provide theoretical development for these two roles of early investors.

3.1 | Early investors' prediction ability

It is well known that investors are mainly concerned with return on investment (Aghion & Bolton, 1992; Akbas & Genc, 2020; Cholakova & Clarysse, 2015; Ordanini et al., 2011), and in our research setting, investor return is determined by the profits earned by entrepreneurs from selling crowdfunded products. Because returns are thus linked with the popularity of these crowdfunded products across the entire consumer market, investors proactively seek any project-relevant information to better predict their popularity (Johan & Zhang, 2020; Liu et al., 2022). In contrast to the pure investor's profit motive, consumers mainly seek their favorite products (Belleflamme et al., 2015; Xiang et al., 2019). Consumers are only concerned whether the crowdfunded product fits their personal preferences (Qu et al., 2022), not whether these products are popular in the whole consumer market.

Early investors are also strongly motivated to impose their actual influence upon promoting the success of a crowdfunding campaign. Because investment return is largely determined by the sales revenue from crowdfunded products in the consumer market, early investors serve as sales agents who proactively inform and persuade potential consumers into purchases (Hornuf & Schwienbacher, 2018). Considering these two roles (sales agents and predictors) for early investors, our main hypothesis proposes a positive relationship between early investor contributions and a crowdfunding campaign's success.

H1: The likelihood of a crowdfunding campaign's success is positively related to the proportion of investor contribution in the early stage.

In developing H1, we also argue that early participating investors willingly assume the role of sales agents to persuade consumers into backing the campaign. To initiate



persuasion, early investors interact vigorously with prospective consumers. Cecere et al. (2017) suppose that social interactions between backers may promote a campaign's success. Researchers also find that investors may utilize their social networks to locate potential backers (Bao & Huang, 2017; Colombo et al., 2015; Vismara, 2016). Consequently, we suppose that early investors who aim to harvest investment returns have a strong motivation to positively influence the success of the crowdfunding campaign through their interactions with potential backers. We argue that early investors will proactively seek any connection in their social networks and urge any potential consumer to purchase the crowdfunded product, for which prospective consumers can be persuaded to support campaigns, because early investor contributions to the project signal its superior quality (Burtsch et al., 2013; Kuppuswamy & Bayus, 2018; Vismara, 2018; Zhang & Liu, 2012). This sales agent effect is consistent with the mechanism of group buying, social promotion and social pricing (Gao et al., 2020; Gao et al., 2022; Jing & Xie, 2011). Accordingly, we propose that investor-consumer interaction partially mediates the main effect.

H2: The positive relationship between early investors and crowdfunding success is partially mediated by investor-consumer interaction.

With H1 we argue that early investors can predict the campaign's success. In the following section, we further propose that project-relevant information moderates the impact of early investors on a campaign's success.

3.2 | Project-relevant information

When screening projects to fund, investors evaluate a campaign's potential risks (Lagazio & Querci, 2018), to which end they might tap into information from public sources (Alba & Hutchinson, 1987; Bartov et al., 2000). While investors prefer to undertake a methodical evaluation of all relevant information before making decisions (Chen et al., 2022), information asymmetry between entrepreneurs and potential backers still commonly exists because entrepreneurs have private information that the backers (early investors) do not possess (Janney & Dess, 2016; Madsen & McMullin, 2020). Project-relevant information released by entrepreneurs can effectively reduce such information asymmetry (Courtney et al., 2017; Estrin et al., 2022). As stated previously, early investors focused on investment return will proactively seek any relevant information that might aid them in predicting the success of the crowdfunding project. We thus hypothesize that the effect of early investor contributions on a crowdfunding campaign's success is greater when there is more project-relevant information released.

H3: The positive relationship between early investors and crowdfunding success is stronger when a larger amount

of project-relevant information is released by the entrepreneur.

3.3 | Customization strategies

We further propose that customization strategies for reward-based funding options can moderate the main effect of early investor contributions on a crowdfunding campaign's ultimate success. Individual consumers decide to back campaigns depending on whether the crowdfunded products fit their personal preferences (Belleflamme et al., 2015; Xiang et al., 2019), behaving as searching for suitable products (Xu et al., 2016). However, given that consumers are heterogeneous in product preference (Decker & Trusov, 2010; Kamakura et al., 1996), customization helps early investors to better predict whether the crowdfunded products can satisfy the consumer market with heterogeneous demand. Our study focuses on price discrimination and product differentiation, two prevailing customization strategies (Besanko et al., 2003; Dewan et al., 2003).

Price discrimination can help segment consumers who hold different valuations of the crowdfunded products. We consider three strategies of price discrimination commonly used in reward-based options: advance purchase discounts, quantity discounts, and price bundling. Offering discounts for advance purchases (i.e., "early bird discounts") incentivizes the consumer willing to take the risk of committing early. Quantity discounts are more targeted for high-volume buyers, who contribute more toward the funding goal. And last, price bundling offers a discount while reducing consumer costs related to searching separately for the individual component items in a bundle of products.

Product differentiation in our context refers to the practice of offering differing qualities of crowdfunded products, such as premium versus standard. This kind of quality-based differentiation has long been known as a popular strategy to segment consumers (Desai, 2001). In crowdfunding markets, this strategy can segment consumers who are heterogeneous in their requirements for product quality. Because investor return depends on the success of the crowdfunded products in the consumer market as a whole, when product differentiation is higher, then early investors can predict that the products can satisfy as many potential consumers as possible. Consequently, we propose that the main effect of early investor contributions is larger when a higher level of customization is offered in reward-based funding options.

H4: The positive relationship between early investors and crowdfunding success is stronger when a higher level of customization is offered in reward-based funding options.

Based on the theoretical development above, we present the conceptual framework of this research (Figure 1), in which early investor contribution is a critical influencer of crowdfunding success. This influence is mediated by

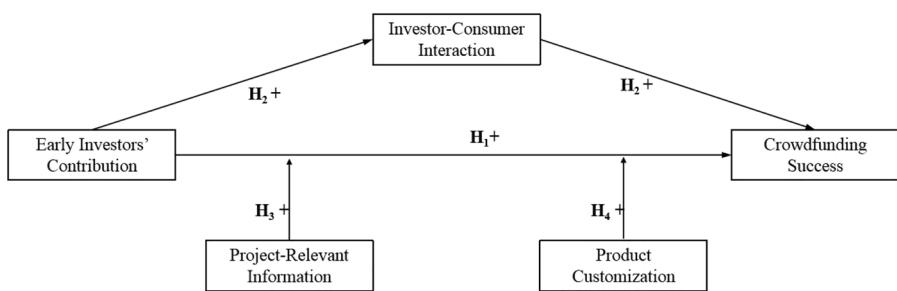


FIGURE 1 The conceptual framework

investor–consumer interaction and is stronger when more project-relevant information is released or when a higher level of customization is offered.

4 | RESEARCH CONTEXT AND DATA

We conducted a field study on a leading crowdfunding platform¹⁰ in China between July 2017 and December 2017. The platform was among the top 10 most popular crowdfunding platforms in China and was among the top 20 worldwide. In 2017, there was a total of 922 projects launched on the platform, out of which 560 projects were successfully funded by a total of 3.79 million backers, with the equivalent of about \$42 million raised. We found that backers of this platform were more likely to fund technology-related campaigns, which accounted for 44% of the successes, with design- and food-related campaigns the second and third most popular categories, respectively. The platform had about 4.62 million registered users, aged 28 years old on average, 71% of whom were male, with the majority of new users (71%) knowing of the crowdfunding platform from social media (e.g., Weibo, WeChat). The companies that gained monetary support from this platform were small and enterprising, with average annual revenue of \$0.8 million, while the entrepreneurs behind 25% of these companies were women.

4.1 | Research context

The platform in our study originally focused on reward-based crowdfunding projects for innovative products, in which we implement two novel options: hybrid crowdfunding and backer referrals. Our study focuses on crowdfunding projects that utilize these two innovations. We did not manipulate and randomize the provision of these two advancements. Thus, our study is a field study rather than a field experiment.

Our first innovation is the hybrid crowdfunding option. In each campaign, both investment-based options and reward-based options were offered, satisfying backer interest in opportunities for both investment and consumption. Loan

interest was the return for investor backers, while innovative products were the reward for consumer backers.

The platform issued strong warnings to backers about the risks of investment- or reward-based funding, in the event an entrepreneur/borrower might default or fail to deliver the preagreed products. These warnings were important for prospective backers for two reasons: (1) there is no agency in China with credit-rating authority, so it is difficult to assess the creditworthiness of entrepreneurs who initiate crowdfunding; and (2) crowdfunding platforms have no power to enforce repayment of loans or delivery of products.

In investment-based funding, entrepreneurs must specify to investor backers their rights and obligations. For example, investors themselves decided how much to lend, although to ensure serious investment the minimum loan amount should approximate the price of a standard-version product in the reward-based option. Investor backers are lenders rather than shareholders. Entrepreneurs borrow money from lenders and commit to repaying the loan with interest, with an 18-month, amortizing, fixed interest rate specified as the return on lender investment. Investor payoff thus depends on the amount of money invested in the platform's projects. This investment return was unsecured, however, betting on (1) the success of the crowdfunding campaign to ensure effective loans¹¹ and (2) the success of the crowdfunded products in the consumer market, as repayment to backers largely depends on profits earned by selling to general consumers.¹² Consequently, investors have a strong incentive to persuade consumers to purchase more in order to maximize the chance of crowdfunding success and minimize the likelihood of default.

Our study's second innovation is the use of backer referrals, which facilitate observing social interactions among backers. In the field study, the platform provided a channel for backers to disseminate information about crowdfunding campaigns through referral links, while imposing no restrictions on the number or type of referrals a backer could

¹¹ Similar to major crowdfunding platforms, all campaigns in our research setting adopt an "all-or-nothing" policy: If the money pledged exceeds the funding goal, the campaign is successful. Otherwise, the entrepreneur would return all pledged money to backers. In our setting, the funding goal can be jointly contributed by investment-based and reward-based options.

¹² In investment-based funding, entrepreneurs were required to specify the source of repayment. In our data, all entrepreneurs chose sales revenue from crowdfunded products.

¹⁰ The name of the company has been concealed because of a nondisclosure agreement.

send. A committed backer could request one of two types of uniquely identifiable link for each potential backer targeted, with one type of link for consumers and the other for investors. The links for potential consumers (investors) contain general information about the innovation project and specific information about reward-based (investment-based) funding. Through this referral process, we can not only observe interactions among backers by counting the number of outbound referral links, but also record the effects of such interactions by tracking the acceptance of each uniquely identifiable referral.

4.2 | Variables and data

We collected samples from crowdfunding campaigns using the following three criteria. First, in order to tease out influence and interaction from other funding sources, we manually checked and eliminated campaigns in which the entrepreneurs used other crowdfunding platforms to fund the same innovative product. Second, consistent with Agrawal et al. (2015), we only considered campaigns that completed the funding duration with an outcome, be it successful or unsuccessful. Third, we follow Kuppuswamy and Bayus (2018) in ensuring that the selected campaigns had funding durations of at least 3 weeks, which provided us ample time to compare funding behaviors during the early stage versus those exhibited in later stages. Our final sample consists of 470 crowdfunding campaigns, covering four categories of products: high-tech, electronics, food, and entertainment. Using the collected sample, we construct the dependent variable, independent variables, and controls.

Crowdfunding success. Our dependent variable suc_i is a binary indicator of whether a crowdfunding campaign i succeeds or not. A campaign is successful if it reaches the preset funding goal, a measure of crowdfunding performance that is widely adopted in the literature (e.g., Agrawal et al., 2015; Kuppuswamy & Bayus, 2018; Lin et al., 2013; Mollick, 2014; Zhang & Liu, 2012).

Early investor contributions. The critical independent variable e_inv_i measures the percentage of investor contribution in the early stage of a crowdfunding project i .¹³ In our main analysis, we specify the early stage as the first 20% of a campaign's funding duration. In a robustness check, we vary the thresholds from 1/10 to 1/3 and find our results from the main model still hold.

Entrepreneur-released information. We measure entrepreneur-released information inf_i as the number of information slides used by the entrepreneur to introduce a crowdfunding project i . In our robustness check, we test other alternative measures. The first alternative counts the total number of words in the information slides while the

¹³ A backer may choose both investment-based funding and reward-based funding. In our sample, such backers make 6% of the funding contribution. We label such a backer as an investor (consumer) if the backer's contribution in investment-based funding exceeds (is exceeded by) that in reward-based funding.

second is a dummy variable indicating whether or not the entrepreneur uploads a video to introduce the project (see Kuppuswamy & Bayus, 2018; Mollick & Nanda, 2016). The third alternative is the number of responses by entrepreneurs to potential backers' questions posted on the webpage. Last, we also follow the literature by considering the number of progress updates posted by entrepreneurs about their crowdfunding projects (Kuppuswamy & Bayus, 2018; Mollick & Nanda, 2016). Entrepreneur-released information can also be considered a proxy of project quality.¹⁴

Investor-consumer interactions. This variable represents the level of social interaction between early investors and potential consumers, as facilitated by the platform by providing such a channel. In our empirical setting, early investors can send two types of referral links. Links targeting consumers contain information about reward-based funding, while links targeting investors contain information about investment-based funding. We measure investor-consumer interactions int_i as the percent of consumer-oriented links sent by early investors. A larger value of int_i (closer to 1) indicates that early investors interact more often with potential consumers, supporting our hypothesis that early investors function as de facto sales agents. We also record the effects of early investor persuasion by tracking the acceptance level of uniquely identifiable referrals.

Customization. In the design of reward-based options, entrepreneurs commonly employ two types of customization strategies, namely price discrimination and product differentiation. In crowdfunding, price discrimination is achieved through three prevailing strategies: advance purchase discount, quantity discount, and price bundling. Product differentiation refers to the strategy of offering quality differentiation among the options of crowdfunded products. We measure customization cus_i as the total number of reward-based options using price discrimination or product differentiation.

We use some characteristics of crowdfunding campaigns as controls. (1) The duration of the funding cycle in days dur_i may affect a campaign's success. A long funding duration contributes to lasting awareness of the project, as suggested by Burtsch et al. (2013), though it may also signal an entrepreneur's weak confidence in their project. (2) The funding goal gal_i dictates the threshold of a campaign's success. Everything else being equal, a higher goal is harder to reach. (3) Investment return can influence crowdfunding performance through its influence on investor participation. We measure investment return ret_i as the preset interest rate of investment-based funding. (4) The price of crowdfunded products pri_i may affect consumer intention to purchase them. (5) Competition between campaigns in the same category as other similarly innovative products may dampen

¹⁴ We acknowledge that in an ideal world, there would be a rating system to objectively measure the quality of a campaign. However, it is well recognized in the literature that there is no standard approach or measurement to do so, and so we use information provided by the entrepreneur as a proxy of project quality. We have further verified the robustness of our results through different types of information provided by the entrepreneur.

TABLE 1 Variables and summary statistics

Variable	Term	Measure	Mean	SD
Dependent variable				
Crowdfunding success	<i>suc</i>	A dummy indicating whether a crowdfunding campaign succeeds or not	0.59	0.49
Variables of interest				
Early investors	<i>e_inv</i>	The ratio of investors' contribution in the early stage of a crowdfunding campaign	0.52	0.37
Entrepreneur-released information	<i>inf</i>	The number of information slides released by the entrepreneur	33.27	14.19
Investor-consumer interactions	<i>int</i>	The ratio of early investors' interactions with consumers (vs. peer investors)	0.78	0.21
Customization	<i>cus</i>	The number of customized options in reward-based funding	8.30	3.26
Controls				
Funding duration	<i>dur</i>	The duration of a crowdfunding campaign in days	32.46	5.28
Funding goal	<i>gal</i>	The goal of a crowdfunding campaign (in USD)	75,380	129,605
Investment return	<i>ret</i>	The interest rate of investment-based funding	0.19	0.15
Price	<i>pri</i>	The average price of the crowdfunded product (in USD) in reward-based funding	151	107
Competition	<i>cmp</i>	The number of competing campaigns active during crowdfunding of the focal campaign	4.12	2.03
Backers	<i>bac</i>	Total number of backers	7,215	12,318
Age	<i>age</i>	The average age of backers	27.86	14.71
Gender	<i>gen</i>	The ratio of male backers	0.68	0.24
Acceptance rate	<i>apt</i>	The number of referred purchases divided by total number of referrals	0.08	0.09

potential backers' desire to fund the focal campaign. Accordingly, our analysis controls for competition cmp_i , the number of competing projects active during the funding cycle of the focal project i . (6) We expect the number of backers bac_i to be positively related to crowdfunding success. (7) Two demographics, backer age and gender, are added as controls, with age_i the average age and gen_i the ratio of male backers. (8) Accepted purchases may be referred by investors or consumers. Thus, we control acceptance rate apt_i , the number of referred purchases divided by total number of referrals.

Table 1 presents variable measures and summary statistics. The dependent variable suc_i has a sample average of 0.59, indicating that nearly 60% of campaigns in the sample reached their funding goals. The data also reveal some interesting facts about the independent variables. For an average crowdfunding campaign, more than half (0.52) of early contribution is made by investor backers, 33 pages of information slides are released by the entrepreneur for each project, the ratio of investor-consumer interactions is 0.78, indicating that early investors strongly favor consumers as the target of persuasion, and about eight customized options are offered in reward-based funding.

We present some interesting facts about controls: The average funding goal is 75,380 USD, and the average price for the crowdfunded product is \$151 USD, meaning that 500 products purchased will represent a successful campaign. On

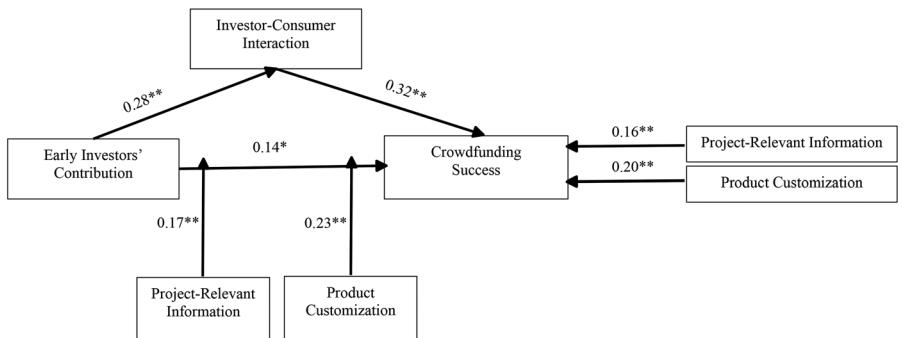
average, there are 7,215 backers sponsoring each campaign; the large number is mainly due to a lottery option in which backers can contribute a minimum amount (e.g., 1 Chinese Yuan) toward the chance to win an entrepreneur's product. Last, the demographics show that backers' average age is 28 and male backers have a ratio of 0.68.

5 | EMPIRICAL ANALYSIS AND RESULTS

5.1 | Results for the main and mediating effects

We run a path analysis to simultaneously test the main and mediating effects. Almost all published applications of path analysis focus on the interpretation of standardized path coefficients (Cole & Preacher, 2014), and so all the variable measures in our path analysis are standardized. The related literature (Bhattacherjee & Park, 2012; Hair et al., 1998) suggests that a path coefficient has practical significance if the effect size is larger than 0.10. Figure 2 displays all path coefficients of the empirical analysis.

Table 2 displays the results of our path analysis in which we first consider the main effect of early investor contributions. The direct effect of early investors on crowdfunding

**FIGURE 2** Path analysis results for the mediation and moderation effects**TABLE 2** Path analysis for mediation effect of *investor-consumer interaction*

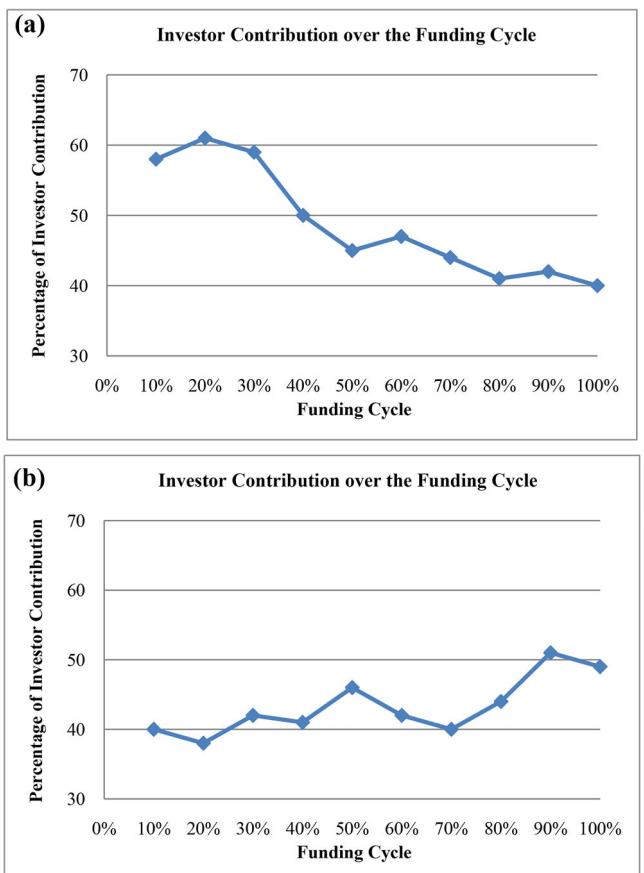
	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>		0.22**	0.14*
<i>e_inv</i> → <i>int</i>	0.28**		
<i>int</i> → <i>suc</i>	0.32**		0.23**
<i>dur</i> → <i>suc</i>	0.06	0.04	0.06
<i>gal</i> → <i>suc</i>	-0.08	-0.11*	-0.13*
<i>ret</i> → <i>suc</i>	0.14*	0.12*	0.12*
<i>pri</i> → <i>suc</i>	-0.17**	-0.19**	-0.22**
<i>cmp</i> → <i>suc</i>	-0.07	-0.08	-0.08
<i>bac</i> → <i>suc</i>	0.11*	0.13*	0.14*
<i>age</i> → <i>suc</i>	0.05	0.04	0.06
<i>gen</i> → <i>suc</i>	0.06	0.07	0.09
<i>apt</i> → <i>suc</i>	0.07	0.05	0.08

* $p < 0.05$, one-tailed test.

** $p < 0.01$, one-tailed test.

success has a coefficient of 0.22, which is both statistically significant ($p < 0.01$) and practically significant (effect size is larger than 0.10). Thus, our H1 is supported. To provide further evidence, we illustrate how investor contribution evolves over the funding cycle. As shown in Figure 3, for successful campaigns, investor contribution can reach 61% in the early stage (i.e., during the first 10%–30% of the funding cycle), compared to 42% for unsuccessful campaigns. These results are consistent with our argument that investor participation in the early stage is critical for the success of a crowdfunding campaign.

The dynamics of investor contribution also reveal other interesting patterns. As presented in Figure 3, for unsuccessful campaigns, we capture a slowly increasing pattern of investor funding. That is, investors contribute 38% through the first 20% of the funding cycle, with contributions climbing to 49% by the end of the cycle. In the subsample of successful campaigns, in contrast, we find the opposite pattern: investor contributions peak at 61% during the first 20% of the funding cycle, then decrease as the campaign proceeds, before bottoming out at 40% by the end. Here we see that despite investor contributions in the early stage, it is con-

**FIGURE 3** (a) Dynamics of investor contribution (successful campaigns). (b) Dynamics of investor contribution (unsuccessful campaigns)

sumers who are mainly responsible for driving a successful campaign. These results are consistent with our arguments about the main effect of early investors.

We also examine the mediating effect of investor-consumer interaction. In testing the mediating role of investor-consumer interaction, we follow the path analysis approach used by Luo and Bhattacharya (2006). The connection from IV to mediator (from *early investors* to *investor-consumer interaction*) has a path coefficient of 0.28 ($p < 0.01$), and the connection from mediator to DV (from

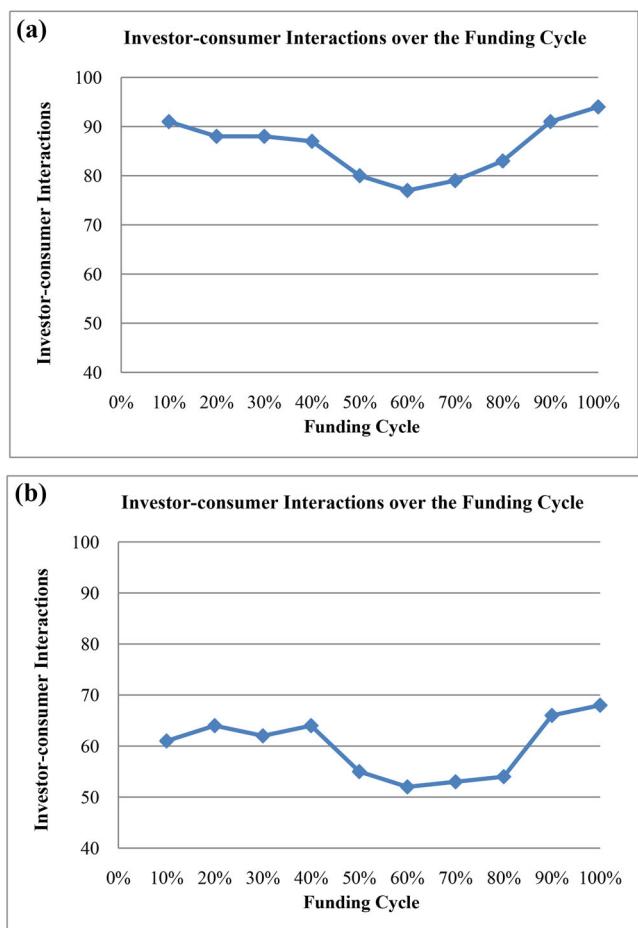


FIGURE 4 (a) Dynamics of investor–consumer interactions (successful campaigns). (b) Dynamics of investor–consumer interactions (unsuccessful campaigns)

investor–consumer interaction to crowdfunding success) is 0.32 ($p < 0.01$). After adding the mediator into the path model, the effect of early investors on crowdfunding success is reduced to 0.14 ($p < 0.05$). According to the interpretation of Baron and Kenny (1986), the main effect of early investor contributions on crowdfunding success is partially mediated by investor–consumer interaction, thereby supporting H2.

To provide further evidence, we present the pattern of investor–consumer interactions over the entire duration of the funding cycle. As illustrated in Figure 4, compared to consumers, early investors have more incentive to recruit prospective consumers. For successful campaigns, investor–consumer interactions remain at a high level (86%) over the funding cycle and peak in the early stage (91% at 10% of the funding duration). For unsuccessful campaigns, investor–consumer interactions are less active (59%) and the pattern is flat over the cycle ($SD = 6\%$). In combination with Figure 3, these results indicate that a significant number of early investors, together with their interactions with potential consumers, add to a campaign’s success.

Moreover, our field study actually records the results of persuasion by tracking the acceptance of uniquely identifiable

referrals. Table 3 shows that in the subsample of successful campaigns, 1.5 consumers are persuaded by an early investor, with each persuaded consumer purchasing an average of 1.6 products. In the unsuccessful subsample, only 0.9 consumer is persuaded, purchasing 1.2 products. In a successful campaign, therefore, the positive relationship between investor–consumer interaction and consumer purchases can be explained by two facts: more consumers are persuaded by an early investor, and each persuaded consumer purchases more products.

Considering that early consumers can also send referral links to peer consumers or investors (i.e., network effects), we conduct a comprehensive empirical analysis to rule out alternative explanations. The results show that only interactions (persuasion) from early investors to later consumers can explain early investors’ contribution to a project’s success. More details and discussions are in the Appendix.

5.2 | Results for the moderating effects

H3 and H4 predict that project-relevant information and product customization moderate the relationship between early investor contributions and a campaign’s success. As shown in Table 4, the interaction terms involving project-relevant information and product customization are positively related to a crowdfunding campaign’s success, with coefficients of 0.17 and 0.23, respectively. Again, these two coefficients are both statistically significant and practically significant, thereby supporting H3 and H4.

Given that we are testing the early-stage prediction role of investors, we further support H3 with a survey about information sources in the early stages of a crowdfunding project. During registration, backers were asked how they heard about the project based on a list of prevalent information sources available, including from entrepreneurs, peer investors, and peer consumers. By restricting survey respondents to one answer to this question, our study recognizes only the primary information source. The survey results in Table 5 show that for successful campaigns, entrepreneurs are the dominant information source for early investors, providing 72% of the information attained. In unsuccessful campaigns, early investors are evenly informed by entrepreneurs, peer investors, and consumers (35%, 35%, and 21%, respectively), reinforcing our argument that the prediction ability of early investors is partly attributed to entrepreneur-released information.

To further verify the effect of product customization, we present the distribution of consumer choices among different customization strategies. Table 6 shows that in the subsample of successful campaigns, choices among customized options are more evenly distributed. 23% choose a discount for advance purchase, 29% prefer a quantity discount, 20% favor price bundling, and the remaining 28% select differentiation in product quality, and the SD among the four strategies of customization is 4%. This pattern is different in unsuccessful campaigns, where 45% of consumers pursue

TABLE 3 Results of persuasion by early investors

	Number of consumers persuaded by an early investor	Quantity of purchase by a persuaded consumer
(1) successful	1.5	1.6
(2) unsuccessful	0.9	1.2
(1) – (2)	0.6	0.4

TABLE 4 Path analysis for moderation effects of *information* and *customization*

	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>	0.22**	0.20**	0.17**
<i>inf</i> → <i>suc</i>		0.18**	0.16**
<i>cus</i> → <i>suc</i>		0.22**	0.20**
<i>e_inv</i> × <i>inf</i> → <i>suc</i>			0.17**
<i>e_inv</i> × <i>cus</i> → <i>suc</i>			0.23**
<i>dur</i> → <i>suc</i>	0.04	0.03	0.03
<i>gal</i> → <i>suc</i>	-0.11*	-0.13*	-0.13*
<i>ret</i> → <i>suc</i>	0.12*	0.09	0.09
<i>pri</i> → <i>suc</i>	-0.19**	-0.18**	-0.16**
<i>cmp</i> → <i>suc</i>	-0.08	-0.04	-0.05
<i>bac</i> → <i>suc</i>	0.13*	0.11*	0.11*
<i>age</i> → <i>suc</i>	0.04	0.08	0.07
<i>gen</i> → <i>suc</i>	0.07	0.06	0.06
<i>apt</i> → <i>suc</i>	0.05	0.05	0.04

p* < 0.05, one-tailed test.*p* < 0.01, one-tailed test.

advance purchase discounts and only 10% choose product differentiation, and the SD among the four strategies is 15%. We find that successful campaigns have an average of 10 customized options compared to 5 options in unsuccessful campaigns, mostly advance purchase discounts. These combined facts suggest that consumers are heterogeneous in their willingness to pay as well as in their preferences for product quality. Such heterogeneity can be better accommodated in campaigns where more customized options are offered.

5.3 | Robustness check

We conduct several additional analyses to validate the robustness of our findings, beginning with a panel data analysis. In the panel data model, we record funding transactions with the timestamp day t of the funding cycle. To obtain balanced panel data we take a fixed duration of 30 days, because this is the cycle length shared by 91% of the campaigns in the original sample. In doing so, we remove funding duration as a control in the panel data analysis, the main purpose of which is to address unobserved fixed effects. Table 7 shows that our results hold consistently even if we use panel data.

We also conduct robustness checks for different specifications of how “early stage” is defined. In the previous analysis,

we specify “early stage” as the period before a campaign reaches 20% of the funding duration, while here we test the early stage as defined as 1/3 of the project’s funding cycle. Table 8 shows that our results are consistent. We also adjust the thresholds ranging from 1/3 to 1/2.¹⁵ We find the model fit and significance of the results decrease.

We then employ alternative metrics to test the effect of entrepreneur-released information. In the main analysis, we measure this variable as the number of information slides provided by the entrepreneur to introduce a crowdfunding project. In the robustness check, we test four other measures: (1) the number of words in the information slides, (2) a dummy variable indicating whether a video is used by the entrepreneur to introduce a project, (3) the number of responses by an entrepreneur to the concerns potential backers posted online, and (4) the number of updates released by the entrepreneur about the campaign’s progress. Again, all these metrics are calculated in the early stage to fit the time frame of early investor contributions, with results that further support our findings.

Next, we check whether the two roles of early investors (sales agents and predictors) are consistent across different product categories. We divide the sample of crowdfunded products into *search goods* versus *experience goods*. In our sample, the category of search goods covers high-tech and electronics, while the category of experience goods includes food and entertainment. This classification is conceptually relevant to our research because the purchase of search goods largely relies on searchable information about key attributes, while the consumption of experience goods depends heavily on consumers’ experience with similar products (Huang et al., 2009). The subsample sizes for search and experience goods are 280 and 190, respectively. We run path analysis for each subsample separately and find that our main findings hold consistently across search goods and experience goods.

6 | CONCLUSIONS

Entrepreneurs actively embrace crowdfunding as a tool to help them launch innovative projects. As a major form of microfinancing, the crowdfunding market cultivates funding demand among a large group of individuals and values small increments of contribution. In innovation-oriented crowdfunding markets, a growing number of entrepreneurs are seeking both reward- and investment-based crowdfunding.

¹⁵ Results are available upon request.

TABLE 5 Backers' sources of information in the early stage

Successful campaigns					
	Sources	From entrepreneurs	From investors	From consumers	Others
<i>Recipients</i>	Investors	72%	18%	3%	7%
	Consumers	12%	71%	9%	8%
Unsuccessful campaigns					
	Sources	From entrepreneurs	From investors	From consumers	Others
<i>Recipients</i>	Investors	35%	35%	21%	9%
	Consumers	30%	31%	33%	6%

TABLE 6 Consumers' choices of customized options

	Price discrimination			
	Advance discount	Quantity discount	Price bundling	Product differentiation
(1) Successful	23%	29%	20%	28%
(2) Unsuccessful	45%	27%	18%	10%
(1) – (2)	–22%	2%	2%	18%

Leveraging a unique data set, we are able to decompose dynamics and interaction among different types of crowdfunding backers. Our study reveals how different types of backers fund differently and influence crowdfunding outcomes asymmetrically.

Our empirical results confirm that investor contributions in the early stages of a crowdfunding campaign are critical for its success. Results also prove that the positive relationship between early investors' contributions and campaign success is mediated by investor-consumer interaction. The positive main effect of early investors' contribution is stronger when more project-relevant information is released and when a higher level of customization (price discrimination or product differentiation) is offered in reward-based funding options. These findings contribute valuable insights to entrepreneurs who seek capital from different types of crowdfunding sources, as well as to the managers of crowdfunding platforms responsible for mechanism design.

6.1 | Generalizability

For any crowdfunding study, the matter of generalizability is essential, and as such, this research poses two related questions. First, whether a hybrid model that accommodates both reward- and investment-based crowdfunding for the same project exists in practice. The answer is yes. Fig, launched in 2015, is a hybrid crowdfunding platform for video games. Consumer backers support a project on Fig in exchange for a copy of the game, branded merchandise, expansion packs, etc. Investor backers buy Fig Game Shares in return for a portion of the profits from game sales (Vissers, 2018). Dividends are distributed to investors based on the number and

percentage of shares they own. Fig has attracted over 120,000 crowd-publishing backers as of December 31, 2020 (Fig Portfolio Shares Series, 2021) and has raised \$8,757,359 for entrepreneurs, in which 37.9% of the total funds were from reward pledges, and 62.1% from investment pledges (Hurst, 2017). Fig earned positive returns for investors from 2017 to 2019 (Coldewey, 2020), and more than half of the video game projects funded on Fig have been profitable, with the platform generating more than \$4 million in revenue in 2019 versus just \$400,000 in 2017 (Dring, 2019).

The second question is whether our results can be extended to other countries where the financial market might be different from China's, such as in the United States. China and the United States are the two countries dominating the world's crowdfunding market (Schmidt, 2020). According to Ziegler et al. (2021), the China market grew significantly from 2016 to 2017, but decreased from 2017 to 2018. Market volume increased from \$243.3 billion in 2016 to \$358.3 billion in 2017, and then decreased to \$215.4 billion in 2018. The United States market kept increasing from 2016 to 2018, with a market size of \$34.5 billion in 2016, \$42.8 billion in 2017, and \$61.1 billion in 2018. Overall, China is comparable to the United States in the size of its crowdfunding market size, and during our research period was the top global crowdfunding market. Our findings from the China market are thus representative and can be extended to Western countries.

We also consider whether differences in the characteristics of the respective financial markets in terms of credit rating, social trust, risk tolerance, and investor maturity level between China and Western countries affect the generalizability of our results. First, we propose that the credit-rating factor weakens our findings. In nations like the United States with sophisticated financial markets a third party (e.g.,

TABLE 7 Robustness check 1: panel data analysis

Mediation analysis	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>		0.19**	0.12*
<i>e_inv</i> → <i>int</i>	0.25**		
<i>int</i> → <i>suc</i>	0.28**		0.21**
<i>gal</i> → <i>suc</i>	-0.06	-0.09	-0.11*
<i>ret</i> → <i>suc</i>	0.13*	0.11*	0.12*
<i>pri</i> → <i>suc</i>	-0.16**	-0.18**	-0.19**
<i>cmp</i> → <i>suc</i>	-0.05	-0.07	-0.08
<i>bac</i> → <i>suc</i>	0.11*	0.11*	0.13*
<i>age</i> → <i>suc</i>	0.06	0.05	0.08
<i>gen</i> → <i>suc</i>	0.04	0.06	0.07
<i>apt</i> → <i>suc</i>	0.05	0.04	0.06

Panel B: Moderation analysis of information and customization

Moderation analysis	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>	0.19**	0.18**	0.16**
<i>inf</i> → <i>suc</i>		0.16**	0.14*
<i>cus</i> → <i>suc</i>		0.19**	0.18**
<i>e_inv</i> × <i>inf</i> → <i>suc</i>			0.16**
<i>e_inv</i> × <i>cus</i> → <i>suc</i>			0.20**
<i>gal</i> → <i>suc</i>	-0.09	-0.11*	-0.12*
<i>ret</i> → <i>suc</i>	0.12*	0.09	0.08
<i>pri</i> → <i>suc</i>	-0.17**	-0.16**	-0.16**
<i>cmp</i> → <i>suc</i>	-0.06	-0.07	-0.09
<i>bac</i> → <i>suc</i>	0.13*	0.12*	0.11*
<i>age</i> → <i>suc</i>	0.05	0.07	0.07
<i>gen</i> → <i>suc</i>	0.06	0.08	0.05
<i>apt</i> → <i>suc</i>	0.07	0.08	0.05

p* < 0.05, one-tailed test.*p* < 0.01, one-tailed test.

FICO) calculates personal credit ratings depending on an individual's credit history (Qi et al., 2022). As there is no national credit-rating organization in China, platforms frequently employ their own credit scoring models using intricate algorithms or formulas that may be less reliable than an American-style third-party credit agency. The resulting environment makes stakeholders more cautious in their decision-making, negatively influencing crowdfunding success, which is also to say that the effect of the hybrid model is underestimated when it comes to the case of a more mature financial market.

We further argue that low level of social trust in Western countries negatively influences our findings. Ding et al. (2015) use a self-report survey to compare entrepreneurs from different countries, with results showing that entrepreneurs in China get a relatively higher score of social trust than those from most Western countries. According to Hofstede's culture theory, the prevailing cultures in China and Western countries are collectivism and individu-

TABLE 8 Robustness check 2: specification of early stage (1/3 of funding duration)

Mediation analysis	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>		0.17**	0.11*
<i>e_inv</i> → <i>int</i>	0.24**		
<i>int</i> → <i>suc</i>	0.27**		0.20**
<i>dur</i> → <i>suc</i>	0.04	0.03	0.04
<i>gal</i> → <i>suc</i>	-0.05	-0.07	-0.08
<i>ret</i> → <i>suc</i>	0.13*	0.12*	0.12*
<i>pri</i> → <i>suc</i>	-0.14*	-0.17**	-0.19**
<i>cmp</i> → <i>suc</i>	-0.06	-0.07	-0.06
<i>bac</i> → <i>suc</i>	0.11*	0.11*	0.13*
<i>age</i> → <i>suc</i>	0.04	0.03	0.05
<i>gen</i> → <i>suc</i>	0.07	0.08	0.09
<i>apt</i> → <i>suc</i>	0.05	0.04	0.06

Panel B: Moderation analysis of information and customization

Moderation analysis	Model 1	Model 2	Model 3
<i>e_inv</i> → <i>suc</i>	0.17**	0.16**	0.15*
<i>inf</i> → <i>suc</i>		0.14*	0.13*
<i>cus</i> → <i>suc</i>		0.17**	0.16**
<i>e_inv</i> × <i>inf</i> → <i>suc</i>			0.15*
<i>e_inv</i> × <i>cus</i> → <i>suc</i>			0.18**
<i>dur</i> → <i>suc</i>	0.03	0.02	0.03
<i>gal</i> → <i>suc</i>	-0.08	-0.09	-0.09
<i>ret</i> → <i>suc</i>	0.10	0.09	0.08
<i>pri</i> → <i>suc</i>	-0.17**	-0.15*	-0.14*
<i>cmp</i> → <i>suc</i>	-0.06	-0.05	-0.05
<i>bac</i> → <i>suc</i>	0.11*	0.09	0.08
<i>age</i> → <i>suc</i>	0.06	0.07	0.09
<i>gen</i> → <i>suc</i>	0.09	0.08	0.06
<i>apt</i> → <i>suc</i>	0.04	0.05	0.04

p* < 0.05, one-tailed test.*p* < 0.01, one-tailed test.

alism, respectively, with social trust proven to be positively related to collectivism (Westjohn et al., 2021). Because of this, the impact of factors related to social trust captured in our empirical setting would be less in Western countries.

Our results will be strengthened in Western crowdfunding markets because of their backers' high level of risk tolerance, which also affects the backers' funding behaviors. Individuals with high levels of risk tolerance prefer uncertain rewards, backing projects earlier even though the project is more uncertain to reach its funding goal (Gong et al., 2021). Uncertainty avoidance is used to measure risk tolerance (Hofstede, 2001), with studies showing that people in Western countries have relatively lower uncertainty avoidance (Atuahene & Li, 2002; Ko et al., 2015; Pan & Tse, 2000; Singh et al., 2005). Consequently, Western investors have a high level of risk tolerance and are more likely to participate in risky

crowdfunding activities, making the impacts in our study stronger in Western markets.

Finally, we consider the factor of investor maturity level. Compared with Western financial markets, which have developed over hundreds of years, the China market is still nascent and Chinese investors are still without an abundance of investment experience. Inexperienced investors thus have a low level of investment skills (Bodnaruk & Simonov, 2015), leaving investors in China cautious of backing crowdfunding projects. With this in mind, we suppose that the impacts detailed in our research would be more significant in more mature financial markets, where investors have more investment experience and knowledge.

Chinese and Western markets differ in credit rating, social trust, risk tolerance, and investor maturity level. Among these four factors, three are negative and diminish the positive results in the case of China, with only one factor favoring our findings. We thus expect that our results will be more salient in Western countries where the cultural and financial environments are more suitable.

6.2 | Managerial implications

This research provides useful implications for entrepreneurs using both reward- and investment-based crowdfunding. Our analysis reveals that early investors are critical for the success of crowdfunding campaigns due to their ability to better predict that success, and more importantly, to assume the function of recruiting potential consumers. Our findings offer two suggestions for attracting early investors.

First, entrepreneurs should disseminate more project-relevant information in a timely fashion, and our findings remind startups that a promising innovation can attract investor contribution early on. For example, entrepreneurs should provide details about the innovative product, quickly respond to concerns from potential backers, and periodically make progress updates on the project throughout the funding cycle. Alternatively, entrepreneurs may use high investment return as an economic incentive. Both strategies can signal an entrepreneur's confidence, which can be detected by competent investors. Campaigns offering more project-relevant information are also appealing to early investors.

Second, entrepreneurs should customize reward-based options for their crowdfunding campaigns, which is particularly important when consumers have different valuations or preferences. Crowdfunded products offered by campaigns with product customization can better satisfy a consumer market with heterogeneous demand and gain popularity among various types of consumers. This is crucial, because investors are concerned about the success of the crowdfunded products across the whole consumer market. Early investors interpret this information as a positive signal of a successful crowdfunding outcome, and so will be attracted to campaigns utilizing product customization.

These valuable insights also provide guidance toward the design of crowdfunding platforms. Our findings may encour-

age collaboration and coordination between different types of platforms (investment-based and reward-based) to enhance efficiency (e.g., by saving sunk costs, administrative costs and marketing costs). In one possible mechanism design scenario, an investment-based platform can specify that a lender's financial return (i.e., interest) depends solely on crowdfunding performance in the reward-based platform. As a result, early investors may be motivated to persuade potential consumers to support reward-based crowdfunding. To better coordinate, the two platforms should design tools to facilitate information dissemination as well as interactions between early investors and prospective consumers. To be even more aggressive, the entrepreneur may use an adapted all-or-nothing policy across the two platforms, in which the joint performance of both platforms determines crowdfunding success.

6.3 | Limitations and future research

Our research is subject to some limitations that create promising opportunities for future research. The first opportunity for future studies can be to make direct comparisons by designing a field experiment. Researchers can also potentially clarify the value of multiple forms of crowdfunding when directly comparing the hybrid approach against the single approach, or they could investigate whether the simultaneous- or sequential-launching approach to the two types of crowdfunding works differently than the other.

Another direction for future research can examine whether our findings can be extended to other types of crowdfunding, like reward-based and equity-based funding. It would be interesting to explore whether shareholders in equity-based funding exhibit behavior similar to lenders in investment-based crowdfunding.

Future research may also want to consider other areas of crowdfunding, such as in health, education, and social responsibility. In these crowdfunding markets, backers might hold different motivations than for investment return or consumer utility. For example, a campaign for a philanthropic cause may inspire perspective backers' desire for helping others or joining a community with moral capital. These different motivations and their asymmetric influences on crowdfunding performance require careful studies.

Our results suggest that further research might be warranted to examine the effects of interaction between backers from different countries, as differences such as average income and risk preference may generate different levels of impact. We expect the effects of this research could be amplified in countries with higher income and relatively lower uncertainty avoidance.

Finally, future studies can extend the performance measurement of a project beyond a crowdfunding campaign. The success of a crowdfunding campaign indicates a good start for the innovative product, though merely ensuring its entry to the market. In contrast, postcampaign sales more accurately reflect the product's long-term performance, demonstrating

whether the innovative products can survive in the consumer market (Ma et al., 2022). It would therefore be interesting to investigate how different backers asymmetrically influence long-term success of an innovation project.

ACKNOWLEDGMENTS

Huazhong Zhao receives support from Hong Kong Research Grants Council [CityU 11504020].

ORCID

Feiqiong Wei  <https://orcid.org/0000-0003-3706-9282>
Yinliang (Ricky) Tan  <https://orcid.org/0000-0001-8971-818X>
Haibing Gao  <https://orcid.org/0000-0001-7564-2516>
Huazhong Zhao  <https://orcid.org/0000-0002-2077-9993>

REFERENCES

- Aghion, P. & Bolton, P. (1992) An incomplete contracts approach to financial contracting. *The Review of Economic Studies*, 59(3), 473–494.
- Agrawal, A., Catalini, C. & Goldfarb, A. (2015) Crowdfunding-geography, social networks, and the timing of investment decisions. *Journal of Economics & Management Strategy*, 24(2), 253–274.
- Akbas, F. & Genc, E. (2020) Do mutual fund investors overweight the probability of extreme payoffs in the return distribution? *Journal of Financial and Quantitative Analysis*, 55(1), 223–261.
- Alba, J.W. & Hutchinson, J.W. (1987) Dimensions of consumer expertise. *Journal of Consumer Research*, 13(4), 411–454.
- Atuahene, G.K. & Li, H. (2002) When does trust matter? Antecedents and contingent effects of supervisor trust on performance in selling new products in China and the United States. *Journal of Marketing*, 66(3), 61–81.
- Atwell, M. (2017) The best kickstarter feature nobody's using. Retrieved from <https://medium.com/kickstarter/the-best-kickstarter-feature-nobody-s-using-f4eaf36bfff> (Accessed on June 20, 2023).
- Bao, Z. & Huang, T. (2017) External supports in reward-based crowdfunding campaigns: A comparative study focused on cultural and creative projects. *Online Information Review*, 41(5), 626–642.
- Bapna, S., Benner, M. & Qiu, L. (2019) Nurturing online communities: An empirical investigation. *MIS Quarterly*, 43(2), 425–452.
- Baron, R.M. & Kenny, D.A. (1986) The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Bartov, E., Radhakrishnan, S. & Krinsky, I. (2000) Investor sophistication and patterns in stock returns after earnings announcements. *The Accounting Review*, 75(1), 43–63.
- Belleflamme, P., Omrani, N. & Peitz, M. (2015) The economics of crowdfunding platforms. *Information Economics and Policy*, 33, 11–28.
- Besanko, D., Dubé, J.P. & Gupta, S. (2003) Competitive price discrimination strategies in a vertical channel using aggregate retail data. *Management Science*, 49(9), 1121–1138.
- Bhattacherjee, A. & Park, S.C. (2012) Why end-users move to the cloud: A migration-theoretic analysis. *European Journal of Information Systems*, 23(3), 357–372.
- Bloomberg. (2022) Crowdfunding market size worth \$1.30 billion by 2028. Retrieved from <https://www.bloomberg.com/press-releases/2022-03-16/crowdfunding-market-size-worth-1-30-billion-by-2028-million-insights> (Accessed on June 20, 2023).
- Bodnaruk, A. & Simonov, A. (2015) Do financial experts make better investment decisions? *Journal of Financial Intermediation*, 24(4), 514–536.
- Burtsch, G., Ghose, A. & Wattal, S. (2013) An empirical examination of the antecedents and consequences of contribution patterns in crowd-funded markets. *Information Systems Research*, 24(3), 499–519.
- Burtsch, G., Ghose, A. & Wattal, S. (2015) The hidden cost of accommodating crowdfunder privacy preferences: A randomized field experiment. *Management Science*, 61(5), 949–962.
- Burtsch, G., Hong, Y. & Liu, D. (2018) The role of provision points in online crowdfunding. *Journal of Management Information Systems*, 35(1), 117–144.
- Cai, Z., Liu, D. & Chan, J. (2017) Better to give than receive: The impact of donation-based crowdfunding schemes on crowdfunding outcomes of reward-based campaigns. Working paper.
- Cecere, G., Guel, F.L. & Rochelandet, F. (2017) Crowdfunding and social influence: An empirical investigation. *Applied Economics*, 49(57), 5802–5813.
- Chen, D., Huang, C., Liu, D. & Lai, F. (2022) The role of expertise in herding behaviors: Evidence from a crowdfunding market. *Electronic Commerce Research*, Forthcoming.
- Cholakova, M. & Clarysse, B. (2015) Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments? *Entrepreneurship Theory and Practice*, 39(1), 145–172.
- Coldewey, D. (2020) Republic acquires Fig, adding games to its startup crowdfunding platform. Retrieved from <https://techcrunch.com/2020/04/17/public-acquires-fig-adding-games-to-its-startup-crowdfunding-platform/> (Accessed on June 20, 2023).
- Cole, D.A. & Preacher, K.J. (2014) Manifest variable path analysis: Potentially serious and misleading consequences due to uncorrected measurement error. *Psychological Methods*, 19(2), 300–315.
- Colombo, M.G., Franzoni, C. & Rossi-Lamastra, C. (2015) Internal social capital and the attraction of early contributions in crowdfunding. *Entrepreneurship Theory and Practice*, 39(1), 75–100.
- Courtney, C., Dutta, S. & Li, Y. (2017) Resolving information asymmetry: Signaling, endorsement, and crowdfunding success. *Entrepreneurship Theory and Practice*, 41(2), 265–290.
- Decker, R. & Trusov, M. (2010) Estimating aggregate consumer preferences from online product reviews. *International Journal of Research in Marketing*, 27(4), 293–307.
- Desai, P. (2001) Quality segmentation in spatial markets: When does cannibalization affect product line design? *Marketing Science*, 20(3), 265–283.
- Dewan, R., Jing, B. & Seidmann, A. (2003) Product customization and price competition on the internet. *Management Science*, 49(8), 1055–1070.
- Ding, Z., Au, K. & Chiang, F. (2015) Social trust and angel investors' decisions: A multilevel analysis across nations. *Journal of Business Venturing*, 30(2), 307–321.
- Dring, C. (2019) Fig CEO: "The Kickstarter Model Sets Game Developers Up to Fail." Retrieved from <https://www.gamesindustry.biz/the-kickstarter-model-sets-game-developers-up-to-fail> (Accessed on June 20, 2023).
- Estrin, S., Khavul, S. & Wright, M. (2022) Soft and hard information in equity crowdfunding: Network effects in the digitalization of entrepreneurial finance. *Small Business Economics*, 58, 1761–178.
- Fig Portfolio Shares Series. (2021) Retrieved from https://www.sec.gov/Archives/edgar/data/1658966/000121390021017333/ea138295-253g2_figpub.htm (Accessed on June 20, 2023).
- Gao, H., Kumar, S., Tan, Y. & Zhao, H. (2022) Socialize more, pay less: Randomized field experiments on social pricing. *Information Systems Research*, 33(3), 935–953.
- Gao, H., Zhao, H., Tan, Y., Lin, Y. & Wei, L. (2020) Social promotion: A creative promotional framework on consumers' social network value. *Production and Operations Management*, 29(12), 2661–2678.
- Ge, R., Feng, J., Gu, B. & Zhang, P. (2017) Predicting and deterring default with social media information in peer-to-peer lending. *Journal of Management Information Systems*, 34(2), 401–424.
- Gerber, E.M. & Hui, J. (2013) Crowdfunding: Motivations and deterrents for participation. *ACM Transactions on Computing-Human Interaction*, 20(6), 1–32.
- Gong, J., Pavlou, P.A. & Zhang, Z. (2021) On the use of probabilistic uncertain rewards on crowdfunding platforms: The case of the lottery. *Information Systems Research*, 32(1), 115–129.



- Hair, J., Anderson, R., Tatham, R. & Black, W. (1998) *Multivariate data analysis* (5th edn.). Englewood Cliffs, New Jersey: Prentice-Hall.
- Hall, C. (2017) Crowdfunding platform Fig finally turned a profit for investors. Retrieved from <https://www.polygon.com/2017/8/10/16125828/fig-first-profitable-game-equity-investment-kingdoms-and-castles> (Accessed on June 20, 2023).
- Hofstede, G. (2001) *Cultural consequences* (2nd edn.). Thousand Oaks, CA: Sage Publications.
- Hong, Y., Hu, Y. & Burtch, G. (2018) Embeddedness, pro-sociality, and social influence: Evidence from online crowdfunding. *MIS Quarterly*, 42(4), 1211–1224.
- Hornuf, L. & Schwienbacher, A. (2018) Market mechanisms and funding dynamics in equity crowdfunding. *Journal of Corporate Finance*, 50, 556–574.
- Hu, M., Li, X. & Shi, M. (2015) Product and pricing decisions in crowdfunding. *Marketing Science*, 34(3), 331–345.
- Huang, P., Lurie, N.H. & Mitra, S. (2009) Searching for experience on the web: An empirical examination of consumer behavior for search and experience goods. *Journal of Marketing*, 73(3), 55–69.
- Hurst, S. (2017) Fig announcement: Hosted Four of the top ten most crowdfunded video games of 2016 (Infographic). Retrieved from <https://www.crowdfundinsider.com/2017/01/94579-fig-announcement-hosted-four-top-ten-crowdfunded-video-games-2016-infographic/> (Accessed on June 20, 2023).
- Indiegogo. (2022) StartEngine and Indiegogo team up to help startups raise capital from ideation to Series C. Retrieved from <https://www.prnewswire.com/news-releases/startengine-and-indiegogo-team-up-to-help-startups-raise-capital-from-ideation-to-series-c-301603894.html> (Accessed on June 20, 2023).
- Janney, J.J. & Dess, G.G. (2016) The risk concept for entrepreneurs reconsidered: New challenges to the conventional wisdom. *Journal of Business Venturing*, 21(3), 385–400.
- Jing, X. & Xie, J. (2011) Group buying: A new mechanism for selling through social interactions. *Management Science*, 57(8), 1354–1372.
- Johan, S. & Zhang, Y. (2020) Quality revealing versus overstating in equity crowdfunding. *Journal of Corporate Finance*, 65, 101741.
- Kamakura, W.A., Kim, B. & Lee, J. (1996) Modeling preference and structural heterogeneity in consumer choice. *Marketing Science*, 15(2), 152–172.
- Kim, K. & Viswanathan, S. (2019) The experts in the crowd: The role of experienced investors in a crowdfunding market. *MIS Quarterly*, 43(2), 347–372.
- Ko, D., Seo, Y. & Jung, S. (2015) Examining the effect of cultural congruence, processing fluency, and uncertainty avoidance in online purchase decisions in the U.S. and Korea. *Marketing Letters*, 26, 377–390.
- Kumar, N., Qiu, L. & Kumar, S. (2018) Exit, voice, and response on digital platforms: An empirical investigation of online management response strategies. *Information Systems Research*, 29(4), 849–870.
- Kuppuswamy, V. & Bayus, B.L. (2018) Crowdfunding creative ideas: The dynamics of project backers. In: D. Cumming & L. Hornuf (Eds.), *The economics of crowdfunding*. Cham: Palgrave Macmillan.
- Lagazio, C. & Querci, F. (2018) Exploring the multi-sided nature of crowdfunding campaign success. *Journal of Business Research*, 90, 318–324.
- Lin, M., Prabhala, N.R. & Viswanathan, S. (2013) Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending. *Management Science*, 59(1), 17–35.
- Lin, M. & Viswanathan, S. (2016) Home bias in online investments: An empirical study of an online crowdfunding market. *Management Science*, 62(5), 1393–1414.
- Liu, J., Liu, X. & Shen, H. (2022) Reward-based crowdfunding: The role of information disclosure. *Decision Sciences*, 53(2), 390–422.
- Lukkarinen, A., Teich, J.E., Wallenius, H. & Wallenius, J. (2016) Success drivers of online equity crowdfunding campaigns. *Decision Support Systems*, 87, 26–38.
- Luo, X. & Bhattacharya, C.B. (2006) Corporate social responsibility, customer satisfaction, and market value. *Journal of Marketing*, 70(4), 1–18.
- Ma, S., Hua, Y., Li, D., & Wang, Y. (2022) Proposing customers economic value or relational value? A study of two stages of the crowdfunding project. *Decision Sciences*, 53(4), 712–749.
- Madsen, J.M. & McMullin, J.L. (2020) Economic consequences of risk disclosure: Evidence from crowdfunding. *The Accounting Review*, 95(4), 331–363.
- Mollick, E. (2014) The dynamics of crowdfunding: Determinants of success and failure. *Journal of Business Venturing*, 29(1), 1–16.
- Mollick, E. & Nanda, R. (2016) Wisdom or madness? Comparing crowds with expert evaluation in funding the arts. *Management Science*, 62(6), 1533–1553.
- Ordanini, A., Miceli, L., Pizzetti, M. & Parasuraman, A. (2011) Crowdfunding: Transforming customers into investors through innovative service platforms. *Journal of Service Management*, 22(4), 443–470.
- Pan, Y. & Tse, D. (2000) The hierarchical model of market entry modes. *Journal of International Business Studies*, 31, 535–554.
- Qi, Z., Chen, D. & Xu, J. (2022) Do facial images matter? Understanding the role of private information disclosure in crowdfunding markets. *Electronic Commerce Research and Applications*, 54, 1–14.
- Qu, S., Xu, L., Mangla, S.K. & Chan, F.T.S. (2022) Matching in reward-based crowdfunding platforms: A hybrid machine learning approach. *International Journal of Production Research*, 60(24), 7551–7571.
- Roma, P., Gal-Or, E. & Chen, R.R. (2018) Reward-based crowdfunding campaigns: informational value and access to venture capital. *Information Systems Research*, 29(3), 679–697.
- Schmidt, J. (2020) Crowdfunding statistics worldwide: Development & volumes. Retrieved from <https://p2pmarketdata.com/articles/crowdfunding-statistics-worldwide/> (Accessed on June 20, 2023).
- Singh, N., Zhao, H. & Hu, X. (2005) Analyzing the cultural content of web sites: A cross-national comparison of China, India, Japan, and US. *International Marketing Review*, 22(2), 129–146.
- Thies, F., Wessel, M. & Benlian, A. (2016) Effects of social interaction dynamics on platforms. *Journal of Management Information Systems*, 33(3), 843–873.
- Vismara, S. (2016) Equity retention and social network theory in equity crowdfunding. *Small Business Economics*, 46, 579–590.
- Vismara, S. (2018) Information cascades among investors in equity crowdfunding. *Entrepreneurship Theory and Practice*, 42(3), 467–497.
- Vissers, J. (2018) 8 Facts you should know before crowdfunding a video game on Fig. Retrieved from <https://www.merchantmaverick.com/8-facts-you-should-know-before-crowdfunding-a-video-game-on-fig/> (Accessed on June 20, 2023).
- Wei, Z. & Lin, M. (2017) Market mechanisms in online peer-to-peer lending. *Management Science*, 63(12), 4236–4257.
- Wessel, M., Thies, F. & Benlian, A. (2016) The emergence and effects of fake social information: Evidence from crowdfunding. *Decision Support Systems*, 90, 75–85.
- Westjohn, S.A., Magnusson, P., Franke, G.R. & Peng, Y. (2021) Trust propensity across cultures: The role of collectivism. *Journal of International Marketing*, 30(1), 1–17.
- Xiang, D., Zhang, L., Tao, Q., Wang, J. & Ma, S. (2019) Information or emotional appeals in crowdfunding message strategy: An empirical investigation of backers' support decisions. *Journal of the Academy of Marketing Science*, 47, 1046–1063.
- Xu, B., Zheng, H., Xu, Y. & Wang, T. (2016) Configurational paths to sponsor satisfaction in crowdfunding. *Journal of Business Research*, 69(2), 915–927.
- Xu, J.J. & Chau, M. (2018) Cheap talk? The impact of lender-borrower communication on peer-to-peer lending outcomes. *Journal of Management Information Systems*, 35(1), 53–85.
- Zhang, J. & Liu, P. (2012) Rational herding in microloan markets. *Management Science*, 58(5), 892–912.
- Ziegler, Z., Shneor, R., Wenzlaff, K., Suresh, K., Paes, F.F., Mammadova, L., et al. (2021) The 2nd Global Alternative Finance Market Benchmarking Report. Retrieved from <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/the-2nd-global-alternative-finance-market-benchmarking-report/> (Accessed on June 20, 2023).

How to cite this article: Wei, F., Tan, Y.R., Gao, H. & Zhao, H. (2023) When investors meet consumers: The roles and interactions of different backers in the crowdfunding market. *Decision Sciences*, 1–17.
<https://doi.org/10.1111/deci.12612>

APPENDIX

In our study, we propose and test that backers' interaction and the subsequent social influence occur between early investors and later consumers. We construct two variables to test this mechanism: one is early investors' contribution; the other is investor-consumer interactions (more accurately, early investor-later consumer interactions). The second variable is measured as the ratio of early investors' interactions with later consumers (vs. later investors). Note that early investors interact with either later consumers or later investors. Once our study captures the positive mediating effect of early investor-later consumer interactions, it also identifies the corresponding effect of early investor-later investor interactions. Similarly, we test the alternative route through early consumers, that is, early consumers send referral links to peer consumers or investors. We first define a similar variable called early consumers' contribution, and then construct the variable of early consumer-later investor (vs. later consumer) interactions. We capture no significant effects on this route. In this way, we consistently show that early investor-later consumer interaction is the actual mechanism for the identified effect of early investors' contribution.

The path of early consumers-later investor (vs. later consumer) shows no influence (the coefficient is positive but not significant). This is because referrals between peer consumers cannot compare with those between investors and consumers in terms of motivation, effort, and scope. Thus, referrals between peer consumers cannot impose a significant impact on crowdfunding success. In our conceptual framework about early investors-later consumers, the motivation of investor referral is investment return. Early investors who eagerly pursue investment profit would proactively seek and persuade all prospective consumers into purchases. Such referrals are unconditional in motivation, effort, and scope. In comparison, when early consumers refer the crowdfunded products to their friends, they mainly consider benefit of their friends, that is, fit in preference. Thus, early consumers make referrals under two conditions: (1) the referred consumers are close friends, and (2) early consumers know preference of their friends very well. In this situation, the effect size of this type of referral is weak (in terms of number and effort of referrals).

Moreover, consistent with our argument above, referrals by different parties (early investors or early consumers) are expected show independent effects on crowdfunding success. This is because referrals by different parties influence crowdfunding success with different mechanisms. Thus, referrals by peer consumers would not bias our results of early investors-later consumers.

AUTHOR BIOGRAPHIES

Feiqiong Wei is currently an assistant professor of marketing at the School of Economics & Management, Nanjing Tech University. She received her PhD in marketing from Renmin University of China. Prior to this appointment, she has worked as a marketing consultant in the Glasgow section of TITICACA. She is interested in online retailing, WOM, consumer social networks, and AI marketing.

Yinliang (Ricky) Tan is an associate professor in the C.T. Bauer College of Business at the University of Houston. He is also the senior Bauer fellow and area coordinator in supply chain management at Bauer College. He received his PhD in operations management and information systems and master of science in industrial engineering from the University of Florida. He is recognized as one of the 40 Most Outstanding Business Professors Under 40 worldwide by *Poets & Quants* in 2019. He has also received the Carol J. Latta Emerging Leadership Award for Outstanding Early Career Scholars by Decision Sciences Institutes in 2019 and ISS Sandra A. Slaughter Early Career Award in 2022.

Haibing Gao is an associate professor of marketing at the School of Business, Renmin University of China. He received his PhD in marketing from the University of Florida. His research interests include crowdfunding, probabilistic selling, and social marketing. His work has been published in *Journal of Marketing*, *Information Systems Research*, and *Production and Operations Management*.

Huazhong Zhao is an associate professor of marketing at the College of Business, City University of Hong Kong. He received his marketing PhD from the University of Florida, his master's and bachelor's degree in computer science from Oxford University and Tsinghua University. His research interests include social influence, social commerce, artificial intelligence, and healthcare. He serves as PhD coordinator for the Department of Marketing at the City University of Hong Kong.