EFFECTS OF EARLY PARTICIPATION IN LOTTERIES ON SUBSEQUENT INVESTMENT BEHAVIORS IN CROWDFUNDING: AN ENGAGEMENT THEORY

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ABSTRACT

Prior studies of the effects of lotteries in crowdfunding have reported mixed findings. We contribute to the debate by asking how early lottery participation influences continued investment and peer investment in a subsequent stage, seeking to identify tactics that project creators can apply to optimally leverage the role of early lottery participation. Drawing on engagement theory, we develop and test a model using data from 424 projects collected from a Chinese crowdfunding platform. Results demonstrate that early lottery participation has a significant effect on continued investment (i.e., the investment of early lottery participants), but a nonsignificant effect on peer investment (i.e., the investment of non-early participants). Dynamic interaction between project creators and backers enhances the effects of early lottery participation on continued investment and peer investment.

Keywords: Early lottery participation; Peer investment; Information asymmetry; Engagement theory; Crowdfunding

1. Introduction

Crowdfunding allows entrepreneurs to raise money from a large number of people via internet platforms such as GoFundMe, Kickstarter, and Indiegogo (Mollick, 2014). The global crowdfunding industry is expected to reach a value of US$196.36 billion by 2025 (Technavio Research, 2021). However, competition for backers' funds is fierce. Official data from Kickstarter show that 65% of projects fail to achieve funding targets (Y. Li et al., 2020). Whether

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or not a project attains its funding target by the end of its crowdfunding period, which lasts around 40 days on average (Mollick, 2014), is largely influenced by the amount raised in its early days (Chan et al., 2020; Z. Li et al., 2020; Vismara, 2018). Crosetto and Regner (2018) find that "a quarter of all pledges are made within the first 10% of the normalized project duration" (p. 1467). Consequently, project creators must develop strategies to engage potential backers in the early stages of crowdfunding projects (Kuppuswamy & Bayus, 2018; Z. Li et al., 2020), such as lotteries, which are especially popular among Chinese platforms (e.g., Kaistart et al., 2019; Gong et al., 2021).

Existing studies of lotteries in the crowdfunding literature have mainly examined the effect of lotteries, and their related elements (e.g., lottery reward structure, number of total lottery participants), on ultimate funding performance, but have offered conflicting views on the role of lotteries (Du et al., 2019; Gong et al., 2021). Some studies note that lotteries can attract backers, while others posit that lotteries might "crowd out" real investors (Gong et al., 2021; Xiang et al., 2019). The possible reasons for this lack of consensus are a failure to investigate the dynamic influence of early lottery participation (defined as participating in a lottery during the first 10% of the project duration; Crosetto & Regner, 2018), a limited ability to differentiate different backer influences on lotteries, and a lack of investigation of moderating conditions such as dynamic interactions. Accordingly, in the crowdfunding context, which features inherent uncertainty and financial risk (Courtney et al., 2017; Mollick, 2014), we formulate the following research questions:

RQ1: Does early lottery participation have different influences on different types of investment (e.g., investment by early lottery backers vis-à-vis non-early backers) in a subsequent stage?

RQ2: How do dynamic interactions moderate the effect of early lottery participation on a) continued investment and b) peer investment?

The motivation for the current research is to address the above research questions by differentiating the subsequent investment into continued (i.e., early lottery backers) and peer investment (i.e., non-early backers), both of which are crucial for the success of the project and total amount of collected money. We draw on engagement theory to investigate whether early lottery participation has differential effects on the different types of subsequent investment. We also explore the moderating effect of dynamic interaction as an engagement tool to attract backers and to reduce their perceived uncertainty. Engagement refers to "a [consumer's] state of being occupied, fully-absorbed or engrossed, thus generating a level of attraction to, or repulsion from, a focal engagement object" (Brodie et al., 2011, p. 257). Thus, we argue that lotteries are a means to engage backers, consequently leading to continued and peer investments. *Continued investment* refers to backers who not only participate in early lotteries but also invest in the subsequent periods (e.g., the remaining 90%; Vismara, 2018). *Peer investment* refers to backers who do not participate in the early stage of either lotteries or regular fundraising but invest in the subsequent stages (Bustamante & Frésard, 2020; Vismara, 2018). The boundary factor of *dynamic interaction* refers to interactive communications between project creators and (potential) investors (Mollick, 2014).

This study makes three notable contributions. Our first contribution relates to the dynamic influence of lotteries. We complement the prior lottery literature by examining the effects of early lottery participation on the subsequent investment of various backers (i.e., backers who participate in an early lottery, and those who do not). Prior empirical studies have examined the role of lottery options and the total number of lottery participants during the crowdfunding process, but offer conflicting views on the role of lotteries as a result of a lack of focus on the dynamic influence of lotteries (Du et al., 2019; Gong et al., 2021; Xiang et al., 2019). A more fine-grained examination of early lottery participation and its impacts on subsequent investment behaviors will shed more light on the effects of lotteries. We are the first to introduce the concept of *early lottery participation*, finding that it has different effects on investment behaviors in the subsequent stage.

Second, we contribute to the crowdfunding literature by investigating the differential role of early lottery participation on subsequent investment in crowdfunding settings. Prior crowdfunding research has recognized the importance of early investment, which is considered a quality signal that enhances funding performance (Chan et al., 2020; Zhang & Liu, 2012). However, the literature does not provide alternative promotional strategies to attract investors in the early stage. An investigation of lottery activities and a comparison of early lottery participation on different types of backer investment can provide guidance for practitioners to allocate their limited resources. We find that lotteries can better engage the crowd in the early period for *early participants'* continued investment, but does not engage *peers* to invest.

Finally, the crowdfunding context helps us to better understand engagement theory. Prior studies have tested how firms motivate customers or employees to develop emotional and cognitive bonds that encourage them to make voluntary contributions beyond transactional activities through gamification, storytelling, or new technology in marketing, management, and information system areas (e.g., social media contexts; Harmeling et al., 2017; Lim et al., 2022). In crowdfunding settings, the lottery activity is about money, and this is transparent to peers (Ma et al., 2022). However, the types of engagement initiatives that are effective in terms of generating real investment, and how the

lottery scheme acts as an engagement tool to increase continued and peers' investment behaviors, is understudied. The current research complements engagement theory by considering how lotteries work alongside dynamic interaction as engagement instruments to attract subsequent investment for both early lottery and non-early lottery participants.

2. Literature Review

2.1. The Significance of Early Investment in Crowdfunding

Crowdfunding is the "collective effort by consumers who network and pool their money together, usually via the internet, in order to invest in and support efforts initiated by other people or organizations" (Ordanini et al., 2011, p. 443). While some project creators incentivize backers with rewards (e.g., products and services), others offer financial and equity incentives (Ma et al., 2022; Mollick, 2014; Kuo et al., 2020; Vismara, 2018; Zhong et al., 2022).

Prior studies of investment dynamics in crowdfunding have consistently demonstrated the importance of high levels of investment in the early stages of the crowdfunding cycle. Illustratively, Vulkan et al. (2016) and Crosetto and Regner (2018) conclude that campaign performance is largely dependent on attracting investors willing to make large pledges at an early stage. Similarly, Nguyen et al. (2019) and Kickstarter (2011) find consistent evidence of a U-shaped pattern of funding activity over time, in terms of the number of investors and the magnitude of financial contributions to crowdfunding campaigns, underscoring the need to understand investment dynamics and the importance of the early stage. From a theoretical perspective, the importance of the early stage has been attributed to the "collective attention effect" (Kuppuswamy & Bayus, 2017); when a project is first launched, it is new, intriguing, and heavily promoted. However, news about the new campaign "decays over time, resulting in fewer investments" (Hornuf & Schwienbacher, 2018, p. 560).

2.2. Lotteries and Crowdfunding Performance

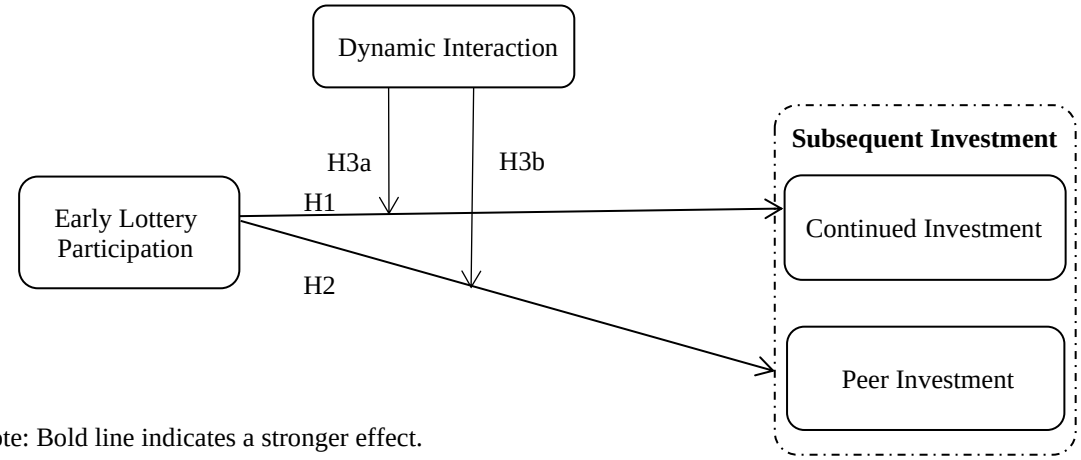
Lotteries have emerged as a tactic through which project creators seek to enhance crowdfunding performance, most notably in China (Du et al., 2019; Gong et al., 2021). Lotteries have three core elements: a small entry price, an attractive prize, and a random chance of winning that prize (Du et al., 2019). Although each participant in a lottery has an equal chance of winning, many participants exhibit a positivity bias that increases their subjective forecasts of success (Starmer & Sugden, 1991). Lottery participation reflects an economic incentive (i.e., winning a prize) and hedonic value, such as fun, sensation-seeking, and socialization (Ariyabuddhiphongs, 2011; Lam, 2007).

Scholars have drawn various conclusions about the effects of lotteries on crowdfunding performance. Although some studies suggest that lotteries have no effect, or even a negative impact, on crowdfunding performance (Gong et al., 2021; Xiang et al., 2019), the weight of evidence suggests that the relationship is "sophisticated" (Du et al., 2019, p. 429). Du et al. (2019) find that, while lotteries do increase the amount of funds raised, they extend the time to achieve crowdfunding success and cannibalize the effects of alternative investment options. Similarly, Gong et al. (2021) demonstrate the double-edged nature of lotteries, finding that, although lotteries attract a larger number of project backers ("crowding in" the masses), they reduce the overall probability of reaching funding goals ("crowding out" success) because backers tend to choose the typically cheaper lottery option over traditional investment options. Xiang et al. (2019) observe differential effects of lotteries on different types of investors; lotteries have a positive effect on consumer backers' investment decisions, but not on professional investors.

Despite their salient contributions, two related limitations of the extant literature regarding the relationship between lotteries and crowdfunding performance motivate our study. First, to the best of our knowledge, existing studies have failed to examine the dynamic effects of lottery participation on crowdfunding performance. Therefore, it is unknown whether or not lottery participation during the early stage increases the subsequent investments of either early lottery participants or non-early participants. By neglecting these issues, prior studies might have misjudged the efficacy of lotteries in crowdfunding settings. Second, we are unaware of any prior research that has identified the moderating effect of dynamic interaction on the relationship between lotteries and subsequent investment. By understanding the conditions under which early lottery participation is most effective, project creators are in a better position to ascertain whether or not they should employ lotteries and, if so, how. To address these research gaps, we draw on engagement theory by investigating the role of early lottery participation on continued and peer investment, as well as the moderating role of dynamic interaction.

3. Hypotheses Development

Our research model is displayed in Figure 1. First, we discuss how absorption, dedication, and interaction explain the effect of early lottery participation on continued investment (H1) and peer investment (H2). Next, engagement theory – in particular, interaction – is used to hypothesize a positive moderating effect of dynamic interaction on the effects of early lottery participation on continued investment and peer investment (H3a and H3b).



Note: Bold line indicates a stronger effect.

Figure 1: Research Model

3.1. Engagement Theory

Engagement theory, widely applied in the areas of management, psychology, and sociology (Brodie et al., 2011; Chiang et al., 2020; Kumar et al., 2019; Schaufeli and Bakker, 2004), explains the instrumentality of specific psychological states including absorption, dedication, and interaction. Absorption reflects individuals' concentration on and enjoyment of the focal object; dedication pertains to feelings of enthusiasm, belongingness, and persistence regarding the focal object; and interaction captures the two-way communication between individuals and the focal object (Brodie et al., 2011). Engagement can be created by activities such as gambling, video games, and lotteries, to engender user absorption and dedication (Castillo et al., 2021; Fu et al., 2017; Hamilton et al., 2021). Prior studies in crowdfunding contexts have considered storytelling, innovative ideas and knowledge, and audio and visual information as engagement instruments to provide backers with a good experience and develop psychological bonds with them (Demiray et al., 2021; Robiady et al., 2021; Yang et al., 2022). In contrast to the concept of engagement as used in marketing and psychological areas, engagement activities in crowdfunding contexts may be observed by peer investors. However, prior research has understudied the role of engagement activities on peer backers' investment.

3.2. Early Lottery Participation and Subsequent Investment

Crowdfunding projects are characterized by perceived information asymmetry, whereby backers often believe that project creators have more project-relevant information than they do (Vismara, 2018). Given the low entry price of lotteries, backers might therefore consider lotteries to be a first step, with relatively low risk. In turn, this initial investment might then provide a basis for further engagement and, consequently, later continued investment (Ruan et al., 2018; Shen et al., 2015).

Based on engagement theory, individuals who are absorbed in and dedicated to the focal object experience a pleasant mental state, a sense of belongingness and persistence (Schaufeli & Bakker, 2004). Lottery participation entails unpredictability regarding who will win the prize, which is exciting and fun (Siebert et al., 2020). Lottery participation can therefore be seen as a pleasant and engaging experience that facilitates persistence with the focal object (Du et al., 2019). The pleasure and excitement derived from lotteries motivates backers to continuously engage with a project, and make further investments.

Additionally, consistent with engagement theory, the state of engagement evoked by lottery participation might increase interactions, allowing for the gathering of project-relevant information from project creators, further mitigating issues surrounding perceived information asymmetry (Courtney et al., 2017). To enter lotteries, participants must provide some form of contact information, typically an email address, social media account, and/or telephone number; project creators therefore have greater channels via which to interact with backers, allowing them to keep backers updated with the latest information and project details (Kickstarter, 2020). Lottery participants will thus receive updated project information, as a basis on which to make a further investment. Accordingly, we formulate the following hypothesis:

H1: *Early lottery participation has a positive effect on continued investment.*

According to engagement theory, individuals who are absorbed in a focal object experience a state of arousal, but this may not influence peers' actions (Schaufeli & Bakker, 2004). In crowdfunding contexts, lotteries may be perceived as games to engage participants, and thus might not be considered a "real" type of investment by peers

(Ariyabuddhiphongs, 2011). Lotteries are a type of symbolic reward scheme, in which it is hard to accumulate a large amount of funded money to engage peers (Du et al., 2019). As argued by Gong et al. (2021), lotteries are fun and exciting, but might not be helpful in terms of attracting peers to invest in the actual investment. We further reason that lotteries are less likely to engage peers, and are therefore less likely to lead to subsequent peer investment. Accordingly, we formulate the following hypothesis:

H2: *Early lottery participation has a nonsignificant effect on peer investment.*

3.3. The Moderating Effects of Dynamic Interaction

Based on engagement theory, interactions can provide users rich information to better facilitate engagement (Schaufeli & Bakker, 2004). Dynamic interaction, which refers to frequent online communication between project creators and existing or potential backers, is an engaging means for backers to acquire additional project-relevant information (Mollick, 2014; Zheng et al., 2016). Crowdfunding provides a forum for backers to raise questions about projects and to advocate for projects, and for project creators to address backers' questions (Xiao & Yue, 2018; Zheng et al., 2016). This type of forum is considered an essential part of platforms' integrated marketing communications, and creators are encouraged to reply to online comments to engage with backers (Bi et al., 2017). Backers' comments and project creators' replies typically center on issues related to the project, project rewards, and project creators' credibility and reputation (Bi et al., 2017; Courtney et al., 2017). Project creator–backer interactions demonstrate the benevolence, trustworthiness, and ability of the project creator(s), thus potentially reducing backers' perceptions of risk and increasing engagement with the project (Zheng et al., 2016).

Dynamic interaction can effectively resolve backers' concerns (Zheng et al., 2016) and is seen as an important information channel for project creators to encourage backers to further engage with the project (Liang et al., 2019; Zheng et al., 2016). We expect greater backer engagement from projects with a higher level of dynamic interaction, leading to more continued investment by early lottery participants. Further, rich information sharing in forums could reduce information asymmetry, and provide timely information about projects to engage backers (Zheng et al., 2016). Dynamic interaction can be seen as two-way interpersonal communication among backers and project creators to enhance mutual trust (Zheng et al., 2016), which complements lottery activities as a means to engage peer backers. Accordingly, dynamic interaction further reduces peer doubt regarding the symbolic meaning of early lottery participation. In summary, the engaging effect of dynamic interaction enhances the role of early lottery participation on continued and peer investment. Thus, we posit:

H3a: *Dynamic interaction positively moderates the relationship between early lottery participation and continued investment.*

H3b: *Dynamic interaction positively moderates the relationship between early lottery participation and peer investment.*

4. Research Method

4.1. Sample and Data Collection

We collected data from Kaistart (https://www.kaishiba.com/), one of the biggest crowdfunding platforms in China. Kaistart hosts projects across five categories: homestays, hotels, restaurants, agriculture, and entertainment. Kaistart accepts equity-based and reward-based projects. As a hypothetical example, for an equity-based project, a 30,000 RMB (US$4,431) investment may entitle backers to capital as a return; alternatively, a reward-based project needs backers to pay 200 RMB (US$29.50) for a product or service (e.g., a wrist watch) as a reward. Kaistart follows an all-or-nothing policy: if the goal of the project is not achieved, the project creator must return all money raised to backers. On the Kaistart platform, potential backers can explicitly see the nicknames of other backers (including lottery and regular participants), the amount that they invested, and the date of all investments.

The platform also provides a lottery scheme and forums, via which we are able to test the role of lotteries as well as dynamic interaction. The lottery scheme is optional, and the project creators can determine the lottery investment, winning chance, reward type based on the project type, location, and the creators' experience. On the Kaistart platform, backers have the option to choose the lottery scheme, or they can observe how many others, and who, become involved in the lottery scheme. As a hypothetical example, investing 1 RMB (US$0.148) in the lottery option may offer a 1 in 10 chance of winning a reward, and the number and identity of backers may be observed on the homepage of the project. The reward chance ranges from 1/5 to 1/200, and the prizes range from 25 RMB (US$3.68) to 2000 RMB (US$294.60). Further, the platform provides forums for project creators to provide updates about projects and reply to backers' questions, and for backers to communicate more about project information.

In summary, Kaistart's website provided all the necessary data to test our hypotheses and was therefore the sole source of data used in our analyses. We developed a web crawler using the Python program to collect and analyze data from all crowdfunding projects that ran on the platform between 2015 and 2017 (inclusive). Some data were used in their raw form but others required further processing, for which we used a Java program. We initially gathered data

related to 732 reward-based, equity-based, and mix-reward projects. Of these initial 732 projects, only 52 failed to reach their target. This 92.89% success rate – higher than most other crowdfunding platforms – can be attributed to Kaistart's strict initial screening of projects in terms of their quality, creativity, and creators' backgrounds. All the projects were pre-launched to ensure their popularity and visibility in the first three or four days.

We discarded 261 projects because they did not include a lottery scheme and 47 projects whose project duration was less than 10 days. This was because we operationalized "early" as the first 10% of the project duration, and therefore, projects of less than 10 days violated this key empirical assumption. We were left with a final usable sample of 424 projects, only one of which failed to achieve its crowdfunding target.

4.2. Measures

In Table 1 we provide concise definitions and operationalization details of each of the 17 variables used in our analyses.

4.2.1. Focal Variables

Early lottery participation (independent variables) and continued investment and peer investment (dependent variables) were collected by the web crawler, processed with a Java script, and log-transformed to reduce skewness. Early lottery participation was defined as backers' involvement in the lottery during the early period of the project (Crosetto & Regner, 2018). It was measured as the number of backers who entered the lottery within the first 10% period of the project duration (Vismara, 2018). Continued investment was measured as the number of backers who not only participated in the lottery in the early days but also made a real investment in the subsequent period (e.g., the next 90%) of the project (cf., Vismara, 2018). Peer investment was adapted from prior literature: Bustamante and Frésard (2020) and Vismara (2018). Bustamante and Frésard (2020) define peer investment as the market peers' financial investment in the industrial area, and Vismara (2018) defines early investment as pertaining to the number of early investors in crowdfunding contexts. We followed the above studies to adapt peer investment as the number of backers who did not participate in the early stage but invested in the subsequent stage (i.e., the final 90%; log-transformed to reduce skewness). Dynamic interaction (the moderator) was calculated from the website data using a Java script, as the total sum of comments from customers' postings and creators' replies (log-transformed to reduce skewness).

4.2.2. Control Variables

Informed by the existing literature on crowdfunding performance, we included 12 control variables in our analyses. Seven control variables were related to project characteristics (Mollick, 2014; Mollick & Nanda, 2015): number of pictures, words, reward levels, project industry, project location, project duration, and dynamic interaction. Five control variables were related to creator characteristics (Liang et al., 2019): team diversity, team size, creator's supported projects, initiated projects, and tenure. To reduce skewness, the variables (the dummy variables of project industry and project location excluded) were natural log-transformed.

Table 1: Definitions and Operationalization of Variables

Variables	Definition and operationalization
Dependent variables	
Continued investment	The number of backers who not only participated in the *lottery* in the early days but also made a real investment in the subsequent period (e.g., the next 90%) of the project (cf., Vismara, 2018); natural log-transformed to reduce skewness.
Peer investment	The number of backers who did not participate in the early period (excluding the lottery and regular participants) but made a real investment in the subsequent stage of the project (cf., Vismara, 2018); natural log-transformed to reduce skewness.
Independent and moderating variables	
Early lottery participation	The number of backers who entered the lottery within the first 10% period of the project duration (cf., Vismara, 2018); natural log-transformed to reduce skewness.
Dynamic interaction	The number of interactions (e.g., backers' comments and project creators' replies) between backers and project creators in every community forum for the project (Zheng et al., 2016); natural log-transformed to reduce skewness.
Control variables	
Team number	The number of project creators; natural log-transformed to reduce skewness.
Team diversity	The number of industries that the project creators has experience in; natural log-transformed to reduce skewness.
Supported projects	The number of projects supported; natural log-transformed to reduce skewness.
Initiated projects	The number of projects initiated; natural log-transformed to reduce skewness.

Creator tenure	The number of months since the creator first registered on the platform; natural log-transformed to reduce skewness.
Number of pictures	The number of project-relevant pictures posted by the creator(s); natural log-transformed to reduce skewness.
Number of reward levels	The number of reward options offered to backers; natural log-transformed to reduce skewness.
Number of words	The number of words to describe the project; natural log-transformed to reduce skewness.
Project industry	The industry that the project belongs to (1 = service industry, otherwise 0).
Project location	The type of city (based on economic development) in which the project was created (1 = first-tier city, 2 = second-tier city, 3 = third-tier city).
Project duration	The duration (measured in days) from the beginning to the end of the project; natural log-transformed to reduce skewness.

4.2.3. Descriptive Statistics

We present descriptive statistics of the focal variables (independent variable, dependent variable, and moderators) and control variables in Table 2. Some 36.08% (153) of projects were in service industries (e.g., 140 projects in hotels, 11 in restaurants, 2 in fitness clubs), and the rest (271) were in product markets (e.g., 134 in agriculture, 70 in technology, and 67 in other products). On average, the number of early lottery participants per project (the number of lottery participants in the first 10% of project duration) was 47.57, with a range of 0 to 333 backers. In 57.31% of the projects, lottery participants also made real investments in subsequent days, with a range of 1 to 69. The average number of non-early participants who made real investments in the subsequent period was 55.74, ranging from 1 to 990.

The correlation matrix is shown in Table 3. Early lottery participation, continued investment, and peer investment were all positively correlated with each other, with coefficients ranging from 0.07 to 0.53.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Continued investment	424.00	2.36	5.38	0.00	69.00
Peer investment	424.00	55.74	85.23	1.00	990.00
Early lottery participation	424.00	47.57	44.37	0.00	333.00
Dynamic interaction	424.00	117.60	41.52	0.00	233.00
Team number	424.00	3.72	2.53	1.00	17.00
Team diversity	424.00	2.22	1.32	1.00	8.00
Supported projects	424.00	0.99	2.13	0.00	21.00
Initiated projects	424.00	1.15	0.50	1.00	7.00
Creator tenure (months)	424.00	5.20	2.58	1.00	13.00
Number of pictures	424.00	30.67	10.33	12.00	104.00
Number of reward levels	424.00	5.49	1.16	3.00	11.00
Number of words	424.00	2,747.12	1,082.29	0.00	7,957.00
Project industry	424.00	0.36	0.48	0.00	1.00
Project location	424.00	1.92	0.75	1.00	3.00
Project duration (days)	424.00	30.06	11.65	10.00	96.00

Note: None of the variables are log-transformed for the purposes of this table.

Table 3: Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Continued investment	1.00														
2.Peer investment	0.35	1.00													
3.Early lottery participation	0.53	0.13	1.00												
4.Dynamic interaction	0.14	0.38	0.21	1.00											
5.Team number	0.12	0.15	0.07	0.17	1.00										
6.Team diversity	0.10	0.18	0.08	0.21	0.71	1.00									
7.Supported projects	0.17	0.10	0.18	0.12	0.11	0.17	1.00								
8.Initiated projects	0.01	0.04	0.12	0.10	0.06	0.02	0.14	1.00							
9.Creator tenure	0.00	0.10	0.10	0.10	-0.07	-0.03	0.16	0.00	1.00						
10.Number of pictures	0.13	0.30	0.19	0.34	0.40	0.32	0.08	0.10	0.04	1.00					
11.Number of reward levels	0.01	-0.10	-0.02	-0.07	0.03	-0.06	0.01	0.01	0.02	-0.07	1.00				
12.Number of words	0.13	0.18	0.24	0.32	0.16	0.14	0.07	-0.01	0.17	0.29	0.01	1.00			
13.Project industry	0.11	0.26	0.19	0.17	0.14	0.21	0.11	0.01	0.12	0.32	-0.19	0.16	1.00		
14.Project location	-0.07	0.07	-0.08	0.05	0.06	0.03	-0.14	-0.07	-0.02	0.02	0.02	0.06	-0.30	1.00	
15.Project duration	0.16	0.48	0.19	0.31	0.19	0.20	0.06	0.03	0.24	0.34	-0.06	0.21	0.32	-0.01	1.00

Note: Significant at 0.10 level if the absolute value of the correlation is higher than 0.07, and significant at 0.05 level if the absolute value of the correlation is higher than 0.10. To reduce skewness, the variables (project industry, project location excluded) are natural log-transformed.

5. Model Estimation and Results

5.1. Model Estimation

5.1.1. Model Setup

Our research model is estimated as follows.

The main effects model:

$$Continued\ investment = \alpha_1 Early\ lottery\ participation + \alpha_{controls} Controls + \varepsilon \quad (1)$$

$$Peer\ investment = \beta_1 Early\ lottery\ participation + \beta_{controls} Controls + \varepsilon \quad (2)$$

α_1, which captures the effect of early lottery participation on continued investment, is expected to be significant. β_1, which captures the effect of early lottery participation on peer investment, is expected to be nonsignificant. To confirm H1 and H2, α_1 and β_1 are the focus of interest.

The moderating effects model:

$$Continued\ investment = \zeta_1 Early\ lottery\ participation + \zeta_2 Dynamic\ interaction + \zeta_3\ Early\ lottery\ participation*Dynamic\ interaction + \zeta_{controls} Controls + \varepsilon \quad (3)$$

$$Peer\ investment = \eta_1\ Early\ lottery\ participation + \eta_2 Dynamic\ interaction + \eta_3 Early\ lottery\ participation*Dynamic\ interaction + \eta_{controls} Controls + \varepsilon \quad (4)$$

ζ_3 (η_3) shows the moderating effect of dynamic interaction on the effect of early lottery participation on continued investment (peer investment), and should be significant to support H3a (H3b).

5.1.2. Self-selection Correction

Because the lottery option may be influenced by project managers' willingness and experience, self-selection may bias the above research models. Specifically, for projects initiated in a first-tier city, with a tangible reward or for project creators with rich experience, the lottery scheme is more likely to be adopted (Du et al. 2019; Gong et al. 2021). The two-step approach developed by Heckman (1979) was adopted to correct any self-selection bias. In the first step, we tested the factors that influence the lottery option, formulated as a binary variable using the full sample (n = 732). It was found that project type (a dummy variable set to 1 if project type is a tangible product, otherwise 0), project location, creator's supported projects, creator's tenure, and project words significantly influence the lottery option (shown in Appendix 1). Next, we calculated the inverse Mills ratio, and considered it in the second step of the above research models to correct the self-selection bias.

5.2. Main Effects

As most of our focal variables (continued investment for early lottery participants excluded) were normally distributed, ordinary least squares was used to test Equations (1)–(4), using STATA 14.1.

As shown in Model 1 and Model 4 of Table 4, all the controls were entered to regress on continued investment and peer investment, respectively. Model 2 and Model 4 added the main effect of early lottery participation to test H1 in Equations (1) and (2). Results showed that early lottery participation was positively associated with continued investment (Model 2: $\beta = 0.55$, $p < 0.01$) and peer investment (Model 4: $\beta = 0.02$, $p > 0.01$). Thus, H1 and H2 are supported. We also followed the procedure of Paternoster et al. (1998) to compare the regression coefficients and found that early lottery participation had a stronger effect on continued investment than on peer investment ($p < 0.01$).

5.3. Moderation Results

Hierarchical regression was adopted to test the moderating effects of dynamic interaction on continued investment (H3a) and peer investment (H3b) in Equations (3) and (4), with the results provided in Table 4. Prior to the analyses, the independent and moderating variables were mean-centered to reduce multicollinearity. As shown in Table 4, Model 2 included the main effect, and Model 3 the interaction effect on continued investment. The change in R2 from Model 2 to Model 3 was significant, demonstrating the existence of a moderating effect. Dynamic interaction positively moderated the role of early lottery participation on continued investment (Model 3: $\beta = 0.20$, $p < 0.05$), supporting H3a.

We then tested the moderating effect of dynamic interaction on peer investment. Model 5 added the main effect on peer investment, and Model 6 included the interaction effect. The change in R2 from Model 5 to Model 6 was significant, demonstrating the existence of a moderating effect. Dynamic interaction positively moderated the role of early lottery participation on peer investment (Model 6: $\beta = 0.35$, $p < 0.05$), supporting H3b.

Figure 2 and Figure 3 illustrate these interaction effects. Figure 2 shows that the effect of early lottery participation on continued investment is more pronounced at a high level (one standard deviation above the mean) of dynamic interaction ($\beta = 0.59$, $p < 0.01$) than at a low level (one standard deviation below the mean) ($\beta = 0.46$, $p < 0.01$). Figure 3 shows that early lottery participation has a stronger positive effect on peer investment at a high level of dynamic interaction ($\beta = 0.36$, $p < 0.01$) than at a low level ($\beta = 0.01$, $p > 0.10$).

Table 4: Regression Results (First 10% Period as the Early Stage)

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			0.20** (0.09)			0.35** (0.14)
Early lottery participation		0.55*** (0.05)	0.53*** (0.05)		0.02 (0.07)	0.01 (0.07)
Dynamic interaction	0.11 (0.09)	0.03 (0.08)	0.03 (0.08)	0.51*** (0.12)	0.50*** (0.12)	0.51*** (0.12)
Team number	0.09 (0.12)	0.16 (0.10)	0.17* (0.10)	0.18 (0.16)	0.18 (0.16)	0.19 (0.16)
Team diversity	-0.03 (0.16)	-0.10 (0.14)	-0.12 (0.14)	-0.31 (0.22)	-0.31 (0.22)	-0.34 (0.22)
Supported projects	0.23*** (0.07)	0.10 (0.06)	0.09 (0.06)	-0.04 (0.09)	-0.04 (0.10)	-0.05 (0.10)
Initiated projects	-0.39 (0.36)	-0.16 (0.31)	-0.21 (0.31)	1.76*** (0.48)	1.77*** (0.48)	1.68*** (0.48)
Creator tenure	-0.27 (0.20)	0.02 (0.17)	0.04 (0.17)	1.06*** (0.27)	1.07*** (0.27)	1.10*** (0.27)
Number of pictures	0.08 (0.17)	-0.10 (0.15)	-0.12 (0.14)	-0.10 (0.22)	-0.10 (0.23)	-0.15 (0.23)
Number of reward levels	0.10 (0.23)	0.07 (0.20)	0.08 (0.20)	-0.37 (0.31)	-0.38 (0.31)	-0.35 (0.31)
Number of words	0.08 (0.08)	0.03 (0.07)	0.11 (0.08)	0.25** (0.11)	0.25** (0.11)	0.39*** (0.13)
Project industry	0.04 (0.10)	-0.05 (0.08)	-0.07 (0.08)	0.24* (0.13)	0.23* (0.13)	0.20 (0.13)
Project location	-0.10 (0.07)	-0.01 (0.06)	-0.00 (0.06)	0.44*** (0.09)	0.44*** (0.10)	0.45*** (0.09)
Project duration	0.31** (0.13)	0.13 (0.12)	0.11 (0.12)	0.99*** (0.18)	0.98*** (0.18)	0.96*** (0.18)
IMR	0.33 (0.39)	-0.32 (0.34)	-0.38 (0.34)	-2.52*** (0.53)	-2.55*** (0.53)	-2.65*** (0.53)
Constant	-1.26 (0.86)	-1.68** (0.75)	-2.18*** (0.77)	-7.77*** (1.16)	-7.79*** (1.16)	-8.63*** (1.20)
N	424	424	424	424	424	424
R^2	0.08	0.31	0.32	0.36	0.36	0.37

Note: Standard errors in parentheses and the coefficients are unstandardized; *** p < 0.01, ** p < 0.05, * p < 0.10.

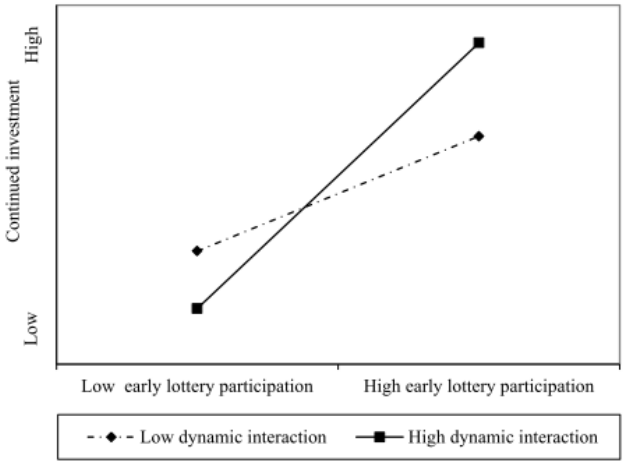


Figure 2: The Moderating Effect of Dynamic Interaction on Continued Investment

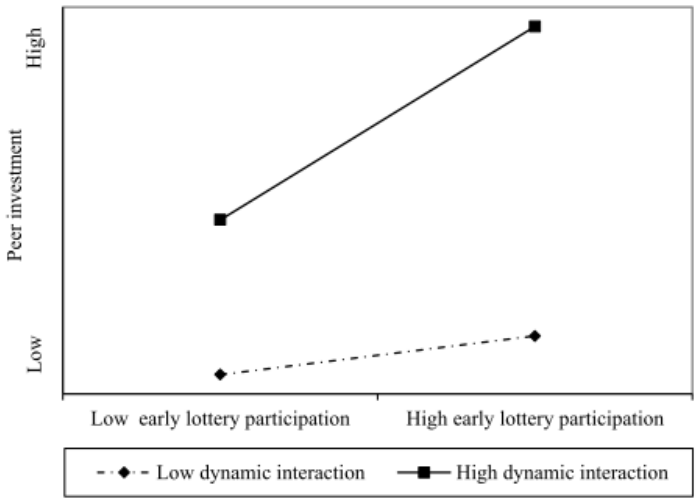


Figure 3: The Moderating Effect of Dynamic Interaction on Peer Investment

5.4. Robustness Checks

To test the robustness of our findings, we tested four other models that incorporated different operationalization of "early" lottery participation. In our original model, we treated early participation as participation within the first 10% period (the average project duration was 30.06 days). In one robustness check, we followed Vismara (2018) by considering the first five days of the project as the early period, and the next few days as the subsequent period (shown in Appendix 2). In a second robustness check (Appendix 3), the first seven days of the project was taken as the early period. In a third robustness check (Appendix 4), we treated the first 20% of the project duration as the early period, and the next 80% as the subsequent period. In a fourth robustness check (Appendix 5), we treated the first third of the project duration as the early period, and the remaining duration as the subsequent period. For all robustness checks, the main effects remained consistent with our original findings. However, there were slight differences regarding the moderation effects. The moderating role of dynamic interaction became significant when the early stage was relatively short (i.e., the first five days, the first 20% period of the project duration). A possible reason for this is that the information contained in the dynamic interaction between backers and creators was more crucial and evident in a shorter early period, when backers had limited information.

Additionally, the variable of continued lottery investment was not normally distributed; hence, we used Poisson regression, which allows for variables with a skewed distribution (Fisher et al., 2019). The main results remained consistent, as shown in Appendix 6.

5.5. Additional Analysis to Test the Subsequent Investment Importance

To test the importance of subsequent investment, we conducted further analysis, and found that both continued investment ($\beta = 0.13$, $p < 0.01$) and peer investment ($\beta = 0.31$, $p < 0.05$) have significant influences on crowdfunding performance (the ratio of money raised for a project relative to the funding goal).

6. Conclusion

6.1. Discussion

In this study, we examined the effects of early lottery participation on the subsequent investment behaviors of early lottery participants and non-participants. We found that early lottery participation had a strong effect on continued investment, but a nonsignificant effect on peer investment. Further, we identified a managerial lever that moderated the effectiveness of early lottery participation; specifically, our results showed that dynamic interaction enhanced the impact of early lottery participation on peer investment and continued investment.

6.2. Theoretical Implications

First, we complement prior lottery studies in crowdfunding settings by exploring the dynamic influence of early lottery participation on subsequent investment behaviors (i.e., continued investment and peer investment). Prior studies have tended to regard lotteries as an alternative form of investment (Du et al., 2019; Gong et al., 2021). Existing research has shown that lotteries attract more "lottery" backers but crowd out "real" backers, to the detriment of crowdfunding success (Du et al., 2019). However, these prior studies have ignored the dynamic role of lotteries, potentially leading to misjudgment of the strategy of lotteries. Complementing the existing research, we are the first

to explore the dynamic role of lotteries, and find that early lottery participation increases the real investment of early lottery participants, though not that of peer backers.

Second, this study extends the crowdfunding literature by identifying the unique role of early engagement participation (i.e., lotteries), based on engagement theory. Existing crowdfunding studies consider early investment a crucial factor to facilitate overall investment performance, while not identifying different types of activities in the early stage (Chan et al., 2020; Vismara, 2018). This study considers lotteries in the early stage as a promotional tool to generate excitement to encourage backers' absorption in and dedication to projects. The results show that early lottery participation produces an engaging experience that exerts a strong influence on continued investment for early participants.

Third, our study enriches the engagement literature by introducing engagement theory to crowdfunding contexts. Existing engagement literature has mainly focused on various engagement initiatives to facilitate individuals' contribution beyond transactional activities (Harmeling et al., 2017; Lim et al., 2022). In contrast to the social media and offline commercial contexts, engagement activities encompass transactional behaviors that can be observed by peer investors in crowdfunding contexts (Ma et al., 2022). By identifying dynamic interaction as a moderating factor and engagement instrument to work alongside lotteries, early lottery participation is no longer merely a symbolic activity, but rather, may signal project quality to engage peers. Dynamic interaction between project creators and potential backers can increase backers' knowledge, which encourages them to actively engage in projects, thereby enhancing the role of early lottery participation on subsequent investment (continued investment or peer investment).

6.3. Managerial Implications

The results of our study are of relevance to platform managers and project creators. On crowdfunding platforms, lottery activities requiring only a small investment can engage a larger crowd for further non-lottery investment. Early lottery participation is more likely to motivate backers to make continued investments (non-lottery) in a subsequent stage. Crowdfunding platforms could provide lottery schemes as an alternative choice for creators to use as a marketing strategy to engage more backers in the early period of the project. They could offer guidelines for creators on how to design lotteries based on several dimensions (e.g., chance of winning, appropriate cost, value of the lottery, and fair rules to select the winner). We also suggest that platforms release newsletters to advertise successful projects with lottery options to show the importance of early lottery participation.

Project creators could adopt various lottery structures to increase early lottery participation, including presenting greater opportunities for winning lottery prizes or showing the attractiveness of the prize. Better use of lottery schemes in an early stage can enhance peer investment when there is dynamic interactions to reduce backers' uncertainty. For example, project creators could reply to questions posed by potential backers in the forum, encourage existing backers to post supportive comments, and produce timely updates to engage backers. Dynamic interaction between project creators and backers is an effective marketing tool for project creators to engage backers. It not only produces an engaging experience for early lottery participants, which may encourage them to make further real investments, but also offers peer backers rich information to reduce skepticism on early lottery participation, potentially leading to their investment.

6.4. Limitations and Future Research Directions

Our empirical work used data from Kaistart, a crowdfunding platform that incorporates both reward-based projects (where backers are rewarded via non-financial incentives, including products and experiences) and equity-based projects (where backers attain an ownership stake in the venture). However, other platforms tend to focus on just one option; for example, Kickstarter uses a reward-based model. Whether or not early lottery participation enhances crowdfunding performance equally on different platforms is worthy of further inquiry because, fundamentally, these might attract different types of backers, with different tolerances for risk and uncertainty (cf., Ariyabuddhiphongs, 2011). Thus, only using Kaistart may represent a limitation, and future studies could explore other platforms to confirm the results.

Further, drawing on engagement theory, we tested our model with secondary data, which did not allow us to include relevant mediators of the relationship between early lottery participation and subsequent investment. The failure to test the mediating mechanism may prevent us from better understanding how lotteries facilitate different types of investment. In future studies, scholars could use experiments to test potential engagement-related mediators, including (but not limited to) information collection, trust, absorption, dedication, and interaction or popularity.

Additionally, although we identified one managerial lever that can enhance the role of early lottery participation (i.e., dynamic interaction), future research should consider alternatives. These might include lottery-related factors such as likelihood of winning the reward and the prize structure of the lottery (Laporte & Laurent, 2015; Yan & Muthukrishnan, 2013). Also, we examine the moderating role of the number of questions and answers from backers and creators, respectively. Future research might examine the differential effects of the content type within these

backer-creator dialogues, including conversations about the initiation plan, reward clarification, market specifics, financial viability, the venture team, and fundraising strategy (Iurchenko et al., 2022).

Further, because of privacy concerns, most platforms do not reveal the specifics of backers' investments, and it is challenging to test the current framework in other platforms. However, if a lottery scheme is adopted and can be observed by peers even in non-crowdfunding contexts, the results may still be universally applied. In future, researchers could collaborate with the platform firm to collect individuals' data to test the generalizability of the current research.

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APPENDIXES

Appendix 1. Self-Selection Bias Correction

Variables	Lottery
Project type	0.47***
	(0.12)
Team number	-0.11
	(0.14)
Team diversity	0.20
	(0.21)
Supported projects	0.18*
	(0.10)
Initiated projects	-1.26***
	(0.26)
Creator tenure	-1.17***
	(0.12)
Number of pictures	0.25
	(0.18)
Number of reward levels	0.12
	(0.22)
Number of words	-0.30**
	(0.13)
Project location	-0.28***
	(0.07)
Project duration	-0.01
	(0.06)
Constant	5.19***
	(1.13)
Observations	731
Pseudo R^2	0.27

Note: Standard errors in parentheses and the coefficients are unstandardized.
*** p<0.01, ** p<0.05, * p<0.10.

Appendix 2. Robustness Test 1-The First Five Days as the Early Stage

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			0.21*			0.10
			(0.11)			(0.13)
Early lottery participation		0.62***	0.57***		0.31***	0.30***
		(0.05)	(0.05)		(0.06)	(0.06)
Dynamic interaction	0.17*	0.10	0.13*	0.60***	0.59***	0.60***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
Team number	0.10	0.11	0.11	0.11	0.09	0.09
	(0.11)	(0.10)	(0.10)	(0.12)	(0.12)	(0.12)
Team diversity	-0.10	-0.08	-0.10	-0.24	-0.21	-0.22
	(0.16)	(0.13)	(0.13)	(0.16)	(0.16)	(0.16)
Supported projects	0.18***	0.09	0.09	0.25***	0.20***	0.20***
	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
Initiated projects	-0.07	-0.32	-0.37*	0.26	0.16	0.14
	(0.25)	(0.21)	(0.22)	(0.25)	(0.25)	(0.25)
Creator tenure	-0.06	-0.06	-0.07	0.20**	0.26***	0.25***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
Number of pictures	0.11	0.11	0.09	-0.09	-0.09	-0.09
	(0.16)	(0.13)	(0.14)	(0.16)	(0.16)	(0.16)
Number of reward levels	-0.02	-0.06	-0.06	-0.20	-0.19	-0.19
	(0.24)	(0.20)	(0.20)	(0.24)	(0.24)	(0.24)
Number of words	0.12	0.01	0.07	0.14*	0.06	0.09
	(0.07)	(0.06)	(0.07)	(0.08)	(0.08)	(0.08)
Project industry	0.06	-0.04	-0.05	-0.42***	-0.53***	-0.53***
	(0.10)	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)
Project location	-0.08	-0.06	-0.06	-0.10*	-0.09	-0.09
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Project duration	-0.05	-0.04	-0.03	-0.03	-0.03	-0.03
	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)
Constant	-0.87	-1.80**	-2.13***	-0.04	-0.69	-0.84
	(0.82)	(0.71)	(0.73)	(0.83)	(0.83)	(0.85)
R^2	0.07	0.30	0.32	0.20	0.27	0.27
$\triangle R^2$		0.24***	0.02*		0.07***	0.00

Note: Standard errors in parentheses and the coefficients are unstandardized, *** p<0.01, ** p<0.05, * p<0.10.

Appendix 3. Robustness Test 2-The First Seven Days as the Early Stage

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			0.18			0.09
			(0.12)		0.29***	(0.14)
Early lottery participation		0.54***	0.53***		(0.06)	0.28***
		(0.05)	(0.05)			(0.06)
Dynamic interaction	0.19**	0.13	0.15*	0.62***	0.62***	0.63***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
Team number	0.13	0.14	0.15	0.15	0.11	0.11
	(0.11)	(0.10)	(0.10)	(0.12)	(0.12)	(0.12)
Team diversity	-0.10	-0.08	-0.10	-0.24	-0.21	-0.22
	(0.15)	(0.14)	(0.14)	(0.16)	(0.16)	(0.16)
Supported projects	0.17**	0.08	0.08	0.19***	0.14*	0.14*
	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
Initiated projects	0.01	-0.21	-0.27	0.25	0.14	0.12
	(0.25)	(0.22)	(0.22)	(0.26)	(0.26)	(0.26)
Creator tenure	-0.07	-0.07	-0.08	0.21**	0.27***	0.26***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
Number of pictures	0.16	0.15	0.14	0.03	0.02	0.01
	(0.16)	(0.14)	(0.14)	(0.17)	(0.16)	(0.16)
Number of reward levels	-0.04	-0.07	-0.07	-0.29	-0.26	-0.26
	(0.24)	(0.21)	(0.21)	(0.25)	(0.25)	(0.25)
Number of words	0.10	0.01	0.05	0.14*	0.06	0.09
	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)
Project industry	0.06	-0.01	-0.03	-0.41***	-0.51***	-0.51***
	(0.10)	(0.09)	(0.09)	(0.11)	(0.10)	(0.11)
Project location	-0.07	-0.06	-0.06	-0.12*	-0.11*	-0.11*
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Project duration	-0.02	0.00	0.01	-0.02	-0.02	-0.02
	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)
Constant	-1.17	-2.11***	-2.40***	-0.67	-1.29	-1.44
	(0.81)	(0.72)	(0.74)	(0.85)	(0.85)	(0.88)
R^2	0.07	0.29	0.29	0.20	0.25	0.25
$\triangle R^2$		0.12***	0.00		0.05***	0.00

Note: Standard errors in parentheses and the coefficients are unstandardized, *** p<0.01, ** p<0.05, * p<0.10.

Appendix 4. Robustness Test 3- The First 20% Period of the Project Duration as the Early Stage

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			0.13			0.21**
			(0.10)			(0.11)
Early lottery participation		0.53***	0.52***		0.28***	0.26***
		(0.05)	(0.05)		(0.06)	(0.06)
Dynamic interaction	0.11	0.04	0.07	0.58***	0.59***	0.64***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.10)
Team number	0.10	0.10	0.10	0.09	0.06	0.07
	(0.11)	(0.10)	(0.10)	(0.12)	(0.12)	(0.12)
Team diversity	-0.06	-0.04	-0.04	-0.21	-0.20	-0.21
	(0.15)	(0.13)	(0.13)	(0.16)	(0.16)	(0.16)
Supported projects	0.15**	0.07	0.07	0.24***	0.20***	0.20***
	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
Initiated projects	-0.07	-0.29	-0.35	0.27	0.18	0.09
	(0.24)	(0.21)	(0.21)	(0.26)	(0.26)	(0.26)
Creator tenure	-0.12	-0.13*	-0.14*	0.18*	0.24**	0.23**
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
Number of pictures	0.17	0.12	0.11	-0.04	-0.05	-0.06
	(0.16)	(0.14)	(0.14)	(0.17)	(0.17)	(0.17)
Number of reward levels	-0.05	-0.08	-0.07	-0.19	-0.16	-0.14
	(0.23)	(0.20)	(0.20)	(0.25)	(0.25)	(0.25)
Number of words	0.11	0.01	0.05	0.18**	0.10	0.17*
	(0.07)	(0.06)	(0.07)	(0.08)	(0.08)	(0.09)
Project industry	0.05	-0.03	-0.04	-0.41***	-0.51***	-0.53***
	(0.10)	(0.08)	(0.08)	(0.10)	(0.10)	(0.10)
Project location	-0.07	-0.05	-0.05	-0.10*	-0.09	-0.10
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Project duration	0.16	0.10	0.10	-0.83***	-0.95***	-0.96***
	(0.12)	(0.11)	(0.11)	(0.13)	(0.13)	(0.13)
Constant	-1.42*	-1.67**	-2.03***	2.24***	2.07**	1.51
	(0.81)	(0.71)	(0.75)	(0.86)	(0.87)	(0.92)
R^2	0.07	0.29	0.29	0.24	0.30	0.32
$\triangle R^2$		0.22***	0.00		0.06***	0.02**

Note: Standard errors in parentheses and the coefficients are unstandardized, *** p<0.01, ** p<0.05, * p<0.10.

Appendix 5. Robustness Test 4-The First Third Period of the Project Duration as the Early Stage

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			0.18*			0.20
			(0.10)			(0.14)
Early lottery participation		0.50***	0.48***		0.27***	0.25***
		(0.05)	(0.05)		(0.06)	(0.06)
Dynamic interaction	0.08	0.09	0.09	0.11	0.08	0.09
	(0.11)	(0.10)	(0.10)	(0.12)	(0.12)	(0.12)
Team number	-0.06	-0.06	-0.07	-0.26	-0.28*	-0.30*
	(0.15)	(0.13)	(0.13)	(0.17)	(0.17)	(0.17)
Team diversity	0.17***	0.10*	0.10*	0.21***	0.16**	0.16**
	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
Supported projects	-0.02	-0.24	-0.30	0.21	0.08	0.01
	(0.24)	(0.21)	(0.22)	(0.26)	(0.27)	(0.27)
Initiated projects	-0.13	-0.15*	-0.16**	0.14	0.21**	0.21**
	(0.09)	(0.08)	(0.08)	(0.10)	(0.10)	(0.10)
Creator tenure	0.19	0.16	0.15	-0.02	-0.02	-0.04
	(0.16)	(0.14)	(0.14)	(0.17)	(0.17)	(0.17)
Number of pictures	-0.07	-0.10	-0.10	-0.35	-0.32	-0.31
	(0.23)	(0.21)	(0.21)	(0.25)	(0.26)	(0.26)
Number of reward levels	0.07	-0.02	0.03	0.16**	0.09	0.14
	(0.07)	(0.06)	(0.07)	(0.08)	(0.08)	(0.09)
Number of words	0.19**	0.11	0.11	0.58***	0.58***	0.58***
	(0.09)	(0.08)	(0.08)	(0.10)	(0.10)	(0.10)
Project industry	0.05	-0.03	-0.04	-0.39***	-0.51***	-0.53***
	(0.10)	(0.09)	(0.09)	(0.11)	(0.11)	(0.11)
Project location	-0.08	-0.06	-0.06	-0.10	-0.09	-0.09
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Project duration	0.18	0.17	0.16	-0.89***	-1.02***	-1.02***
	(0.12)	(0.11)	(0.11)	(0.13)	(0.14)	(0.14)
Constant	-1.59**	-2.05***	-2.23***	2.70***	2.53***	2.32**
	(0.81)	(0.72)	(0.73)	(0.89)	(0.90)	(0.91)
R^2	0.09	0.28	0.30	0.23	0.28	0.29
$\triangle R^2$		0.19***	0.02*		0.05***	0.01

Note: Standard errors in parentheses and the coefficients are unstandardized, *** p<0.01, ** p<0.05, * p<0.10.

Appendix 6. Robustness Test 5-Poisson Regression

Variables	Continued investment			Peer investment		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early lottery participation * Dynamic interaction			-0.14			0.04
			(0.24)			(0.08)
Early lottery participation		0.78***	0.80***		0.07*	0.06*
		(0.08)	(0.09)		(0.04)	(0.03)
Dynamic interaction	0.23	0.11	0.16	0.18***	0.17***	0.17***
	(0.15)	(0.15)	(0.18)	(0.06)	(0.06)	(0.06)
Team number	0.13	0.23	0.22	0.01	0.01	0.01
	(0.16)	(0.15)	(0.15)	(0.07)	(0.07)	(0.07)
Team diversity	-0.07	-0.12	-0.11	-0.03	-0.03	-0.04
	(0.21)	(0.21)	(0.21)	(0.10)	(0.10)	(0.10)
Supported projects	0.23***	0.13	0.13	0.06	0.05	0.05
	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.04)
Initiated projects	-0.22	-0.55*	-0.51	0.06	0.04	0.02
	(0.34)	(0.32)	(0.32)	(0.15)	(0.15)	(0.16)
Creator tenure	-0.16	-0.19	-0.19	0.07	0.07	0.07
	(0.13)	(0.12)	(0.12)	(0.06)	(0.06)	(0.06)
Number of pictures	0.01	-0.02	-0.02	-0.03	-0.04	-0.04
	(0.22)	(0.23)	(0.23)	(0.10)	(0.10)	(0.10)
Number of reward levels	0.15	0.03	0.04	0	0	0
	(0.33)	(0.34)	(0.34)	(0.15)	(0.15)	(0.15)
Number of words	0.26*	0.02	0.02	0.06	0.05	0.06
	(0.14)	(0.14)	(0.14)	(0.05)	(0.06)	(0.06)
Project industry	0.02	-0.1	-0.1	-0.13**	-0.14**	-0.14**
	(0.14)	(0.14)	(0.14)	(0.06)	(0.06)	(0.06)
Project location	-0.09	-0.12	-0.13	-0.03	-0.03	-0.03
	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.04)
Project duration	0.33*	0.16	0.17	-0.22***	-0.23***	-0.23***
	(0.17)	(0.17)	(0.17)	(0.08)	(0.08)	(0.08)
Constant	-4.44***	-3.75***	-4.08***	0.71	0.71	0.67
	(1.42)	(1.38)	(1.53)	(0.57)	(0.57)	(0.57)
Log-pseudo likelihood	-461.67	-414.97	-414.80	-703.80	-702.01	-701.86

Note: Standard errors in parentheses and the coefficients are unstandardized, *** p<0.01, ** p<0.05, * p<0.10.