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An increasing body of entrepreneurship research highlights the prevalence of effectuation as an effective strategy in uncertain environments, yet little is known about how investors react to entrepreneurs' effectuation strategies. In this study, we examine how stretch goals, an effectuation strategy where entrepreneurs adaptively adopt new goals on top of the initial and predetermined goal, affect investors' decisions. On the one hand, stretch goals may mitigate perceived uncertainty by demonstrating an entrepreneur's continuous commitment and sharp sense-making of the changing opportunities and whereas, on the other hand, it may raise questions about the entrepreneur's ability to reach the target, thus increasing uncertainty. An analysis of data from one of the largest crowdfunding platforms in Southeast Asia shows that stretch goal adoption has an instantaneous negative effect on fundraising performance. However, as the fundraising unfolds, entrepreneurs can mitigate, and even reverse the negative effect. Moreover, further exploration demonstrates mechanisms that can worsen or alleviate the initial negative effect. Our study highlights the countervailing effects of stretch goals and has important implications for entrepreneurs that use stretch goals as a strategy to optimize the chances of success in resource acquisition.

Key words: stretch goals, fundraising, crowdfunding, investor evaluation, effectuation

1. Introduction

Securing capital from investors is challenging for entrepreneurs given the difficulties investors face when ascertaining the abilities of entrepreneurs to explore opportunities and achieve their predetermined goals. It becomes even more daunting when entrepreneurs are increasingly stretching their goals (i.e., adding new goals beyond the predetermined one) as an effectuation strategy to capture fast-changing opportunities (Saravasthy 2001, Jiang and Rüling 2019). Stretch goals can be defined as goals with an objective to stretch the current targets and are often difficult to achieve with an unknown attainment probability given current resources (Sitkin et al. 2011). They can motivate and inspire entrepreneurs (Kerr and Landauer 2004, Locke and Latham 2006), and help

them keep flexibility and explore contingencies under uncertain environments, thus improving their performance (Brettel et al. 2012, Deligianni et al. 2017). Success stories of stretch goals usage by entrepreneurs include Elon Musk, the CEO of Tesla and SpaceX, with his stretch goals that made him surpass conventional limits in creativity and performance (Pina e Cunha et al. 2017). Notwithstanding these success stories, critics of stretch goals have also pointed out that they may lead to excessive risk taking, increased perception of failure and demotivation (Gary et al. 2017, Ahmadi et al. 2022). While it has been acknowledged that stretch goals —which have been studied in various fields—can have differing effects ranging from positive to negative, little is known about their implication in shaping investors' funding decisions.

To fill this gap, we examine how entrepreneurs' stretch goals affect investors' decisions, and thus fundraising performance. Based on the prior literature on the paradoxical effects of stretch goals (Gary et al. 2017, Ahmadi et al. 2022), we develop competing hypotheses regarding the relationship between stretch goals and fundraising performance. On the positive side, we hypothesize that stretch goals will improve fundraising performance because the possibility of newly shaped opportunities or options can help augment investors' commitment (Vrecko and Langer 2013). Furthermore, with stretch goals, the venture offers more flexibility, thus allowing it to attract a wider range of investors. Therefore, the increased commitment and venture's flexibility due to stretch goals will reduce investors' perceived uncertainty and improve fundraising performance.

On the negative side, we hypothesize that stretch goals may harm fundraising performance by amplifying risk and uncertainty. Venture resource acquisition stage is characterized by high uncertainty and a high rate of failure (Kuppuswamy and Bayus 2017, Xu and Ni 2022). Stretch goals typically add more difficulty, thereby increasing investors' perception of failure likelihood. Additionally, stretch goals can reduce or reset the perceived progress of the venture towards its funding target. Therefore, this increased uncertainty may reduce investors' willingness to provide their funds (Colombo et al. 2015), which leads to our competing hypothesis on the negative impact of stretch goals on fundraising performance.

To test these hypotheses, we obtain a unique dataset from a leading reward-based crowdfunding platform in Southeast Asia. The platform allows entrepreneurs to adopt stretch goals at any moment during their venture. The dataset contains, but is not limited to, time of stretch goal adoption, details of all transactions including backing and browsing records, comments and replies and other characteristics of each venture. To strengthen our causal identification strategy, we employ a within-platform identification strategy (Proserpio et al. 2017) that exploits a unique design of the crowdfunding platform. Furthermore, we follow prior research and use regression in discontinuity as our econometric model estimation (Goes et al. 2016, Lee et al. 2018).

Our results show that adopting stretch goals will have an instantaneous negative impact on fundraising performance. Investors will perceive increased uncertainty and, as a result, react negatively. Our further exploration shows that this negative effect will be attenuated as the venture progresses because the associated uncertainty diminishes as the venture reaches the stretch goals. In particular, when a venture reaches its stretch goals, surprisingly we see a positive effect due to the reduced uncertainty. We also explore the mechanisms that may alleviate (e.g., comments, replies, late stretch goal adoption) and aggravate (e.g., low initial target goal, technology category) the negative impact of stretch goal adoption.

Our study makes several contributions to the literature. First, we contribute to the literature on entrepreneurship and specifically, effectuation theory. Unlike prior studies that have primarily focused on how entrepreneurs' various effectuation strategies affect their own performance, we theorize and provide evidence on how entrepreneurs' effectuation strategies, such as stretch goals, may drive the evaluation of important resource providers (e.g., external investors). In this way, our work extends the current literature on effectuation theory by offering insights into the potential effect of effectuation on important stakeholders in entrepreneurs' environment (Van Mumford and Zettinig 2022). Furthermore, by showing how the effect of effectuation changes over the course of a venture, we also answer the call for incorporating temporality when evaluating effectuation strategies (Jiang and Tornikoski 2019).

Second, we contribute to the literature on goal setting, specifically the literature on stretch goals. Prior studies have shown the contradicting effects of stretch goals (Gary et al. 2017, Ahmadi et al. 2022), and we build on these works and show how those contradicting effects co-exist and supersede each other over time. Thus, we offer a more nuanced understanding of the paradoxical effects of stretch goals.

Third, we extend the literature on the design of crowdfunding platforms by showing the impact of goal setting design strategy using stretch goals. Prior research has neglected this important design practice and its influence on fundraising performance. Our findings provide indications as to when and how to embrace stretch goals in order to maximize the success probability of fundraising.

2. Literature Review

Entrepreneurs often face a high level of uncertainty during the early stages of their ventures. To overcome uncertainty, the literature has identified causation and effectuation as two approaches entrepreneurs take in the context of new venture creation (Jiang and Rüling 2019). Causation involves taking rational actions based on predicting the future and trying to control it through careful planning and analysis. In this approach, the entrepreneur makes decisions based on a set of predetermined goals and assumes that the future can be predicted with some level of accuracy

(Saravasthy 2001, Jiang and Tornikoski 2019). On the other hand, effectuation involves taking actions based on the resources and opportunities available to the entrepreneur, rather than trying to predict the future. This approach involves adapting to changing circumstances and embracing uncertainty rather than trying to control it (Saravasthy 2001, Jiang and Tornikoski 2019). In effectuation, entrepreneurs focus on creating value and exploiting opportunities as they emerge. This is done by seeking potential stakeholders with whom entrepreneurs can establish new means, identifying and setting new goals over the course of the venture (Jiang and Rüling 2019) and modifying them when needed (Sarasvathy and Dew 2005).

Drawing on a process perspective, Saravasthy (2001)'s original conceptualization of effectuation focused on how effectuation works. Recent literature calls for further studies (Gupta et al. 2016, Jiang and Rüling 2019, McKelvie et al. 2020) to advance our understanding of effectuation by moving beyond simply understanding how effectuation happens to understanding what impact it can have. This entails evaluating effectuation using a variance perspective where the effectuation strategy adopted serve as a variable to explain a particular measure of performance (McKelvie et al. 2020). Although some efforts have been made to examine how effectuation affects performance (Brettel et al. 2012, Deligianni et al. 2017), few studies have tried to examine how stakeholders react to entrepreneurs' effectuation strategies. Investors play an important part when entrepreneurs choose to embrace effectuation (Jiang and Tornikoski 2019), thus understanding how they behave in the face of an effectuation strategy can bring valuable insights to the effectuation literature.

In order to understand how investors react to entrepreneurs' effectuation, we focus on a particular effectuation strategy, stretch goals. Stretch goals are funding targets that are set above the initial funding target. There are contradictory views on how stretch goals may affect investors' contribution to fundraising projects. Studies in favor of stretch goals argue that they could be strategic tools to entice and excite investors (Li and Jarvenpaa 2015). For example, entrepreneurs' utilization of stretch goals may highlight their flexibility in exploring opportunities (Vrecko and Langer 2013), making them more attractive to investors. Another stream of literature cautions the use of stretch goals because achieving stretch goals entails more difficulties and challenges for entrepreneurs (Li and Jarvenpaa 2015), and therefore investors may question entrepreneurs' ability to reach and deliver the promised outcomes, increasing perceived uncertainty and adversely affecting fundraising performance. Despite these disputes, theoretically, little is known about how investors react to entrepreneurs' stretch goals.

3. Hypothesis Development

Recognizing the paradoxical nature of stretch goals (Sitkin et al. 2011, Ahmadi et al. 2022), we present competing hypotheses to explore the relationship between stretch goals and fundraising

performance. We build on the prior literature that posit that stretch goals can influence individuals via affective mechanisms that in turn shape their perception of uncertainty and subsequent behavior (Sitkin et al. 2011), and propose that, on the one hand, stretch goals can highlight entrepreneurs' flexibility in exploring opportunities which can increase venture's attractiveness, thus reducing investors' perceived uncertainty and positively influencing fundraising performance. On the other hand, we propose that stretch goals may invite investors to question the ability of entrepreneurs to achieve the promised outcomes and heighten their fear, thus increasing perceived uncertainty and negatively impacting fundraising performance.

Positive Effect of Stretch Goals

The primary advantage of stretch goals is the flexibility they confer on the venture. Relative to other ventures, ventures with stretch goals offer more varieties of outcomes contingent on fundraising performance which can increase the attractiveness of the venture to a broader range of investors with various requirements (Brettel et al. 2012). When contemplating to invest in a venture, investors cannot fully assess the opportunity profit potential due to uncertainty as the complete evaluation of the opportunity can only be made post hoc (Drover et al. 2014). Instead, investors rely on attributes of the venture such as attractiveness to inform their decision (Drover et al. 2014). The attractiveness of a venture can help reduce investors' uncertainty perceptions (Domurath and Patzelt 2016) because attractiveness can affect individuals' perception and judgement without altering the actual fact (Jiang et al. 2021). Further, in environments characterized by high uncertainty such as early venture stage, flexibility has been found to positively impact venture performance by increasing pre-commitments and facilitating the establishment of alliances with incumbent investors (Deligianni et al. 2017). Pre-commitments and alliances with incumbent investors have the advantage of mitigating new, potential investors' perception of the level of venture uncertainty (Ahlers et al. 2015).

In addition, by making stretch goals known, entrepreneurs can also increase their accountability, making it harder for them to abandon it without embarrassment or appearing inconsistent (Klein et al. 2020). Accountability plays an important role in the funding relationship between investors and entrepreneurs (Grimes 2010) because it can reflect an entrepreneur's continuous commitment and determination (Eddleston et al. 2016) . Typically, when a venture announces stretch goals, it reveals its plans for the future beyond the initially stated goal. Accountability helps to garner a favorable external image which can have the effect of making a venture more attractive to investors (Litz 1997). Thus, the entrepreneur's disclosure of the venture long-term plans can largely reduce investors' perceived uncertainty and increase their commitment to the provision of generous funds (Le Breton–Miller and Miller 2020). In sum, stretch goals can enhance the flexibility of

ventures and the entrepreneur's accountability, which raises the attractiveness of the venture and the entrepreneur's determination, and thus positively influence fundraising performance. Based on these reasons, we propose,

Hypothesis 1a *Stretch goals positively affect the performance of fundraising.*

Negative Effect of Stretch Goals

The uncertainty of early stage ventures leads to a high rate of failure at around 60% (Kuppuswamy and Bayus 2017, Xu and Ni 2022). Sitkin et al. (2011) suggests that stretch goals can facilitate performance but also simultaneously disrupt it because they may elicit negative affective responses that often follow difficult goals. If stretch goals are perceived to be too difficult, their potential positive effect mentioned earlier could be impeded by fear and demotivation (Sitkin et al. 2011). Stretch goals may induce greater uncertainty by adding a layer of difficulty to the venture adopting it. More difficulty can increase investors' perception of failure likelihood. Ahmadi et al. (2022) found that stretch goals can increase the fear of failure because they are perceived as less attainable and can create a negative judgement. When a goal is perceived as less attainable, investors reduce their willingness to commit their funds (Kuppuswamy and Bayus 2017). Stretch goals tend to be more difficult and are more likely to be perceived as less attainable, thus increasing uncertainty and negatively affecting the venture fundraising performance.

In addition, given that stretch goals reset the final fundraising target of the venture, it is likely to affect investors perception of the venture progress. It may reduce or reset the perceived progress of the venture and thereby also increase the venture perceived uncertainty. Perceived progress has been shown to be an important influencing factor of fundraising performance (Kuppuswamy and Bayus 2017). As evidenced in the crowdfunding context, ventures seeking resources from investors usually receive more funds when they are closer to their goals than when they are far from them. Pledging funds to a venture that is closer to its target goal is more appealing than pledging to one that is still far from it (Colombo et al. 2015). Based on these reasons, we propose,

Hypothesis 1b *Stretch goals negatively affect the performance of fundraising.*

4. Methodology

4.1. Empirical Context

To evaluate how stretch goals as an effectuation strategy affect external investors, we choose online crowdfunding as the empirical context because the literature has stated that effectuation is prevalent under conditions of uncertainty (Jiang and Rüling 2019) and crowdfunding is characterized by huge uncertainty regarding the successful collection of funding from potential investors. Moreover, approximately 75% of ventures on crowdfunding platforms failed to deliver or delivered after

considerable delay (Colombo et al. 2015, Xu and Ni 2022). In particular, we choose reward-based crowdfunding because most reward-based crowdfunding platforms such as Kickstarter, adopt an all-or-nothing mechanism where entrepreneurs receive the funding collected only if they reach their target amount. In other words, for example, even when an entrepreneur collected 99.9% of their original target, the platform will return the money to the investors because the entrepreneur fell short of reaching 100%. Thus, we believe that reward-based crowdfunding with an all-or-nothing mechanism provides a perfect context to study how investors react to an entrepreneur's effectuation strategies such as stretch goals.

4.2. Data Source and Sample

Our empirical setting is one of the leading reward-based crowdfunding platforms in Southeast Asia. The platform adopts an all-or-nothing funding mechanism. Since 2012, the platform has attracted more than 350,000 users. In November 2017, the platform introduced the stretch goal function, which allows project creators to adopt stretch goals during their project funding campaign. We obtained proprietary data about the two largest categories on the platform, technology category and community category[1]. Our data are measured on a daily level with records of the exact time when project creators adopt stretch goals, thus enabling us to effectively examine the influence of stretch goals on fundraising performance.

The dataset contains 34,704 project-day observations (884 projects) from November 2017 to March 2022 with 145 projects that adopted stretch goals. For each daily observation and each project, on top of identifying the exact adoption time of stretch goals, we observe the number of backers who supported the project, the number of browsing the project received, the number of comments and replies left by backers and the project creator respectively, and the number of days left before the project ends. We remove projects that did not receive any funding and those that adopted stretch goals on the first day as they do not offer any variation in our variables of interest. In the end, our final sample has 31,147 project-day observations (796 projects) with 138 adopting stretch goals.

4.3. Identification Strategy

One major challenge to our proposed casual effect of stretch goal adoption on fundraising performance may be that the observed pattern is not necessarily being caused by stretch goal adoption. For example, unobserved factors such as the quality of a project may affect both whether the entrepreneur adopts stretch goals and whether backers commit their funds to the project. To overcome this concern and ascertain the casual effect of stretch goal adoption on fundraising performance, we adopt a within-platform identification strategy (Proserpio et al. 2017). This approach

[1] In the late part of the study, we analyze the heterogeneity of these two categories

exploits a unique design of the crowdfunding platform (Figure 1). Because of the design of our chosen platform, when potential backers browse a project on projects' list page, they are able to view all basic information of a project (e.g., project title, amount target, days left) but unable to see whether the project adopted stretch goals or not (Figure 1(a)). They can only see stretch goals when they click to enter the project information page (Figure 1(b)). This allows an identification strategy such that any difference in the pattern of the two performance indicators, browsing and backing, is unlikely to be driven by other unobserved factors. In other words, the effect observed on project's contribution pattern (backing) should not be seen on the traffic pattern (browsing) of the focal project adopting stretch goals if indeed the effect is caused by stretch goal adoption. By showing that the effect of stretch goal adoption is only seen on one measure of fundraising performance, backing (i.e., as the intended effect), rather than another, browsing (i.e., as the counterfactual effect), we can safely infer the impact that stretch goal adoption has on fundraising performance, i.e., backing, and thus eliminate other alternative explanations for the potential effect observed (Dhanorkar 2020).

4.4. Measurement

Dependent Variable. Following past studies (Kuppuswamy and Bayus 2017, Taeuscher et al. 2021, Xiao et al. 2021, Anglin et al. 2022), we measured a project's fundraising performance by calculating the number of backers it received. This variable, i.e., *backers*, captures the number of backers who pledge their support on a given day for a given project. For our identification strategy, we also used another measure of performance as the counterfactual effect, *browsing*, which is computed by aggregating the number of daily browsing a given project received (Burtch et al.

(a) Before entering the project page

(b) After entering the project page

Figure 1 **Illustration of the within-platform identification strategy.**

2015, Burtch et al. 2018). We winsorized these two dependent variables at the 99th percentile to mitigate the influence of outliers (Liu et al. 2014, Gao 2018). In robustness checks, we log-transformed the two dependent variables or replaced *backers* by another alternative performance measure, i.e., the daily amount collected by a given project, and obtained consistent results.

Independent Variable. Our independent variable represents the adoption of stretch goal by a given project. We operationalized this variable as a dummy, which equals one if the given day is on the day of adoption and after adoption (*stretch_goal*). Otherwise, the variable takes the value of zero.

Control Variables. We included a set of controls that may affect the validity of our identification strategy. First, to account for the trend before and after stretch goal adoption, we followed prior research (Goes et al. 2016, Lee et al. 2018) and included *duration*, which represents the number of days after stretch goal adoption, with a positive value after stretch goal adoption, a negative value before stretch goal adoption, and zero on the day of adoption (Goes et al. 2016, Lee et al. 2018). Second, to account for sources of unobserved heterogeneity and in accordance with previous studies (Kuppuswamy and Bayus 2017, Lee et al. 2018, Xiao et al. 2021), we included several control variables known to influence project performance. Prior research has shown that the total number of backers received on day t-1 influences the number of backers received on day t (Xiao et al. 2021, Yang et al. 2020), and given that our chosen platform displays this number in a notable fashion on each project page, we included the cumulative number of backers a given project has received before a given day, with log transformation (*cum_backers*). Because prior backers' comments and the entrepreneur's replies have been shown to also impact crowdfunding performance (Dai and Zhang 2019, Xiao et al. 2021), we controlled for comments and replies posted until day t, with log transformation (*cum_com_message*). To account for the possibility of competition effects among related projects, we included the number of other active projects in the same category as the focal project on day t (*competing_project*) (Xiao et al. 2021). The platform also displays the number of days left for a given project to finish, and in line with prior research (Burtch et al. 2016, Xiao et al. 2021), we added the number of the days left before a project finishes, with log transformation (*days_to_go*), as well as its quadratic term to account for its potential non-linear relationship with performance. We further controlled for other time effects by adding daily dummies (Monday–Saturday), monthly dummies (January–November), and yearly dummies (2017–2021).

4.5. Model Specification

Our aim is to identify the effect that stretch goal adoption has on project fundraising performance. To achieve this purpose, we use regression in discontinuity (RD) (Lee and Lemieux 2010). RD has been extensively used in the literature to demonstrate the causal impact of an intervention on units

by comparing observations before and after the intervention. In our study, the units receiving the intervention are projects and the intervention is the stretch goal adoption. Our approach is similar to prior studies that adopted RD to estimate the causal effect induced by an intervention (Goes et al. 2016, Lee et al. 2018, Pu et al. 2020). Consistent with the common practice in prior research (Goes et al. 2016, Lee et al. 2018), we specify the following polynomial model with fixed effects:

$$\begin{aligned} backers_{pt} = \beta_0 + \beta_1 stretch\_goal_{pt} + \sum_{po=1}^{po} \beta_{2,po} \times duration_{pt}^{po} \\ + \sum_{po=1}^{po} \beta_{3,po} \times stretch\_goal_{pt} \times duration_{pt}^{po} + \beta_4 control_{pt} + T_s + \varepsilon_{pt} \end{aligned} \tag{1}$$

In Equation (1), our key parameter of interest is β_1 which captures the coefficient estimate of *stretch_goal*. β_2 captures the normal trend of the project fundraising performance. To allow the regression to vary on both side of stretch goal adoption, we add an interaction term, $stretch\_goal_{pt} \times duration_{pt}^{po}$ (Goes et al. 2016, Lee et al. 2018), and captures the coefficient estimate of this interaction term. Additionally, Lee et al. (2018) suggest testing models with different orders to check how sensitive the results are to various model specifications. Following this, we test orders ranging from 1 to 3 with respect to the variables estimated by β_2 and β_3. β_4 captures the estimates of the control variables, T_s captures the potential time effects, and ε_{pt} is the normally distributed error term.

For identification, we proposed using the number of browsing as a counterfactual. Thus, we use the same model specification as in Equation (1) with two exceptions. First, we replace the dependent variable from *backers* to *browsing* which is measured by the number of daily browsing. Second, when browsing, potential backers can see the amount already collected rather than the number of backers accumulated, and they cannot also observe messages and replies related to a particular project. Thus, we replace in control variables accumulated number of backers (*cum_backers*) with accumulated amount (*cum_amount*) and we exclude accumulated number of comments and replies (*cum_com_message*).

Given the nature of our dependent variables (*backers* and *browsing*) as non-negative count variables, we use a count data model, the fixed-effects negative binomial model, as our primary specification. Confronted with non-negative count variables, prior studies have relied on count models, including negative binomial and Poisson regression models (Kuppuswamy and Bayus 2017, Ahmadi et al. 2022, Bellavitis et al. 2022). For our main analysis, we use negative binomial because it has the advantage of relaxing the assumptions associated to mean equal to variance and the Poisson model's restriction on over-dispersion (Ahmadi et al. 2022). In robustness checks, we test the robustness of our findings to alternative specifications, such as Poisson model, as well as log linear regression model.

5. Results

Table 1 lists the summary descriptions of our main variables.

Table 1. Descriptive statistics and correlations

Variables	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8
backers	7.28	21.09	0	156								
browsing	23.13	43.60	0	280	0.85							
stretch_goal	0.87	0.330	0	1	-0.15	-0.09						
duration	19.70	19.676	-45	60	-0.13	-0.12	0.60					
cum_backers	4.19	1.87	0	8.62	0.33	0.49	0.17	0.17				
cum_amount	9.72	4.62	0	16.29	0.12	0.26	0.14	0.15	0.78			
cum_com_message	0.56	1.11	0	4.23	0.30	0.54	0.05	0.12	0.66	0.48		
competing_project	12.23	5.03	1	28	-0.07	-0.04	-0.08	-0.08	-0.14	-0.13	-0.01	
days_to_go	3.16	0.86	0	4.78	0.17	0.21	-0.26	-0.58	-0.04	-0.11	0.05	-0.04

Notes. N = 6,246 project-day obs.

For correlations, absolute values greater than 0.04 are significant at p < .05 (two tailed tests).

Table 2 presents the results of our main analyses. Models 1 to 3 of Table 2 report the coefficient estimates specified in Equation (1) predicting backers, controlling for the linear, quadratic and cubic order of duration variables, respectively. The results of Models 1 to 3 show that the coefficient of *stretch_goal* is negative and significant across different model specifications (β = -1.13, $p < .001$ in Model 1, β = -1.05, $p < .001$ in Model 2, and β = -0.81, $p < .001$ in Model 3). We proceed with our falsification test using *browsing* as a counterfactual dependent variable. Models 4 to 6 of Table 2 report the results of models predicting *browsing*, showing no significant effect of stretch goal adoption on user browsing (β = -0.05, $p = .114$ in Model 3, β = 0.02, $p = .642$ in Model 5, and β = 0.05, $p = .223$ in Model 6). Taken together, the results of our main analysis indicate a drop in fundraising performance due to stretch goal adoption, rejecting Hypothesis 1a and supporting Hypothesis 1b; that is, stretch goals increase the uncertainty surrounding a project and thus lead to an immediate negative effect on fundraising performance.

Table 2. Results of main analysis predicting backers versus browsing

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Dependent variable = Backers			Dependent variable = Browsing		
stretch_goal	-1.13***	-1.05***	-0.81***	-0.05	0.02	0.05
	(0.05)	(0.06)	(0.07)	(0.03)	(0.03)	(0.04)
duration	0.04***	0.14***	0.17***	0.01***	0.04***	0.08***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
duration^2		0.00***	0.00***		0.00***	0.00***
		(0.00)	(0.00)		(0.00)	(0.00)
duration^3			0.00			0.00*
			(0.00)			(0.000)
stretch_goal×duration	-0.04***	-0.20***	-0.31***	-0.01***	-0.09***	-0.16***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
stretch_goal×duration^2		-0.00***	-0.00		-0.00***	-0.00
		(0.00)	(-0.00)		(0.00)	(0.00)
stretch_goal×duration^3			-0.00***			-0.00***
			(0.00)			(0.00)
cum_backers	-0.08***	-0.04**	-0.03**			
	(0.01)	(0.01)	(0.01)			
cum_com_message	0.14***	0.14***	0.13***			
	(0.02)	(0.02)	(0.02)			
competing_project	0.02***	0.02***	0.02***	-0.01*	-0.01*	-0.01
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
daystogo	-1.37***	-1.11***	-1.17***	-0.77***	-0.57***	-0.63***
	(0.06)	(0.07)	(0.07)	(0.04)	(0.04)	(0.04)
daystogo^2	0.31***	0.26***	0.27***	0.18***	0.14***	0.16***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
cum_amount				-0.044***	-0.028***	-0.020***
				(0.00)	(0.00)	(0.00)
Constant	2.21***	2.13***	2.09***	3.39***	3.32***	3.32***
	(0.23)	(0.23)	(0.23)	(0.16)	(0.16)	(0.15)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of project-day obs	6,246	6,246	6,246	6,246	6,246	6,246
No. of projects	138	138	138	138	138	138
AIC	23,765.6	23,404.2	23,283.5	37,934.8	37,452.4	37,323.4
BIC	23,974.5	23,626.6	23,519.4	38,136.9	37,667.9	37,552.4

Notes. Standard errors in parentheses.
** p .001, ** p .01, * p .05, + p .10 (two-tailed tests).

Table 3. Results of Poisson models predicting backers

	Model 1	Model 2	Model 3
stretch_goal	-0.49**	-0.51**	-0.33*
	(0.24)	(0.19)	(0.21)
duration	0.01	0.14***	0.11
	(0.02)	(0.05)	(0.11)
duration^2		0.00**	0.00
		(0.00)	(0.01)
duration^3			-0.00
			(0.00)
stretch_goal×duration	-0.01	-0.22***	-0.24**
	(0.01)	(0.05)	(0.11)
stretch_goal×duration^2		-0.00	0.00
		(0.00)	(0.01)
stretch_goal×duration^3			0.00
			(0.00)
cum_backers	-0.05	-0.03	-0.03
	(0.03)	(0.03)	(0.03)
cum_com_message	-0.26**	-0.15	-0.13
	(0.09)	(0.09)	(0.10)
competing_project	0.02	0.01	0.01
	(0.03)	(0.02)	(0.03)
daystogo	-1.07***	-0.93***	-0.95***
	(0.21)	(0.20)	(0.19)
daystogo^2	0.25**	0.24**	0.25**
	(0.09)	(0.08)	(0.08)
Constant	5.09**	4.09**	3.84*
	(1.60)	(1.56)	(1.62)
Time fixed effects	Yes	Yes	Yes
No. of project-day obs	6,246	6,246	6,246
No. of projects	138	138	138
AIC	48,327.8	43,141.2	42,709.7
BIC	48,523.2	43,350.1	42,932.1

Notes. Robust standard errors in parentheses.
**p.001, **p.01, *p.05, +p.10(two-tailed tests).

5.1. Robustness Checks

To ensure that our results are robust, we performed a series of robustness checks. First, we considered the use of alternative models' specifications. Although, we have used a negative binomial estimator due to the nature of our dependent variable, *backers*, fixed-effects Poisson estimator has also been employed with such kind of count variables. The results of our estimations using a fixed-

effects Poisson estimator are provided in Table 3. The results are consistent with those reported in our main analysis.

Second, we log-transformed our original dependent variable *backers* and estimated an ordinary least square (OLS) with fixed-effects model. Results are reported in Models 1 to 3 in Table 4, showing that our results are robust to different forms of dependent variable and correspondingly different estimation models (i.e., negative binomial or OLS).

Third, we replaced *backers* by an alternative measure (i.e., *amount*), with log transformation, and estimated an OLS model with fixed-effects. The variable amount represents the daily amount collected by a particular project (Burtch et al. 2018, Xiao et al. 2021). The results predicting amount are reported in Models 4 to 6 of Table 4, showing a similar pattern as our main analysis.

Table 4. Results of fixed-effects models predicting alternative dependent variables

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Dependent variable=Log(backers)			Dependent variable=Log(amount)		
stretch_goal	-0.60***	-0.76***	-0.69***	-2.06***	-2.19***	-1.95***
	(0.15)	(0.14)	(0.14)	(0.41)	(0.43)	(0.40)
duration	0.01	0.12***	0.17**	0.06	0.32***	0.51***
	(0.01)	(0.02)	(0.06)	(0.03)	(0.07)	(0.13)
duration^2		0.00***	0.01		0.01***	0.02*
		(0.00)	(0.00)		(0.00)	(0.01)
duration^3			0.00			0.00
			(0.00)			(0.00)
stretch_goal×duration	-0.03***	-0.16***	-0.25***	-0.07***	-0.43***	-0.82***
	(0.01)	(0.02)	(0.05)	(0.02)	(0.07)	(0.13)
stretch_goal×duration^2		-0.00***	-0.00		-0.00**	-0.01
		(0.00)	(0.00)		(0.00)	(0.00)
stretch_goal×duration^3			-0.00			-0.00*
			(0.00)			(0.00)
cum_backers	-0.21***	-0.15***	-0.14***			
	(0.04)	(0.04)	(0.04)			
cum_com_message	-0.28*	-0.28**	-0.28**	0.01	0.00	0.01
	(0.11)	(0.10)	(0.09)	(0.03)	(0.03)	(0.03)
competing_project	-0.00	-0.00	0.00	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)
daystogo	-0.57***	-0.51***	-0.62***	-2.97***	-2.72***	-3.19***
	(0.12)	(0.12)	(0.12)	(0.39)	(0.39)	(0.36)
daystogo^2	0.06	0.08	0.11*	0.53***	0.60***	0.72***
	(0.05)	(0.05)	(0.05)	(0.15)	(0.14)	(0.13)
cum_amount				-0.14***	-0.06*	-0.01
				(0.03)	(0.03)	(0.03)

Constant	5.09** (1.60)	4.09** (1.56)	3.84* (1.62)	20.90*** (5.25)	19.11*** (5.23)	18.20*** (5.13)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of project-day obs	6,246	6,246	6,246	6,246	6,246	6,246
No. of projects	138	138	138	138	138	138
R^2	0.25	0.29	0.31	0.14	0.17	0.19
AIC	12,756.7	12,375.1	12,250.6	30,973.9	30,756.6	30,651.1
BIC	12,952.1	12,584.1	12,473.1	31,169.4	30,972.3	30,880.2

Notes. Robust standard errors in parentheses.
**p.001, **p.01, *p.05, +p.10(two-tailed tests).

5.2. Mechanism Testing

We argue that the underlying mechanism of Hypothesis 1b is that backers will perceive greater uncertainty when a project adopts stretch goals, thus reducing their financial support to the project. If the observed negative impact of stretch goals is driven by increased perceived uncertainty, it should be observed that this uncertainty is mitigated gradually when the project unfolds and gets closer to the goal. Intuitively, as a project unfolds and progresses towards its goal, uncertainty will reduce, which in turn can help reduce the initial negative effect that we have observed so far. To this end, we further analyze the pattern of fundraising performance as a project unfolds. Because the initial goal and stretch goals have non-trivial difference on this platform using an all-or-nothing mechanism, in addition to stretch goals we also analyze fundraising performance pattern around goal attainment of the initial goal. To investigate the changes in fundraising performance as a project unfolds and approaches its various funding goals, we follow prior research (Goes et al. 2016) and use the following polynomial model with fixed effects:

$$\begin{aligned} backers_{pt} = &\sum_{po=1}^{po} \beta_{1,po} \times \left(1 - goal_{pt}\right) \times distance_{pt}^{po} \\ &+ \sum_{po=1}^{po} \beta_{2,po} \times \left(goal_{pt}\right) \times distance_{pt}^{po} + \beta_3 goal_{pt} + \beta_5 control_{pt} + \varepsilon_{pt} \end{aligned} \tag{2}$$

where similar to our main analysis, our dependent variable is $backers_{pt}$. The variable $distance_{pt}$ measures the distance to the focal goal for project p at time t, which is measured as the percentage difference between the amount of money raised and the goal of the campaign. It is calculated by dividing the difference between the achieved amount and the goal by the amount of the goal. For example, if the goal of a crowdfunding project is \$10,000 and the campaign successfully raises \$8,000, the distance would be -20%, indicating that the campaign fell short of its goal by 20%. The interaction terms containing β_1 or β_2 allow us to obtain different trends before and after reaching a goal. For example, if a project has not yet reached the focal goal, $\left(1 - goal_{pt}\right) \times distance_{pt}^{po}$ will

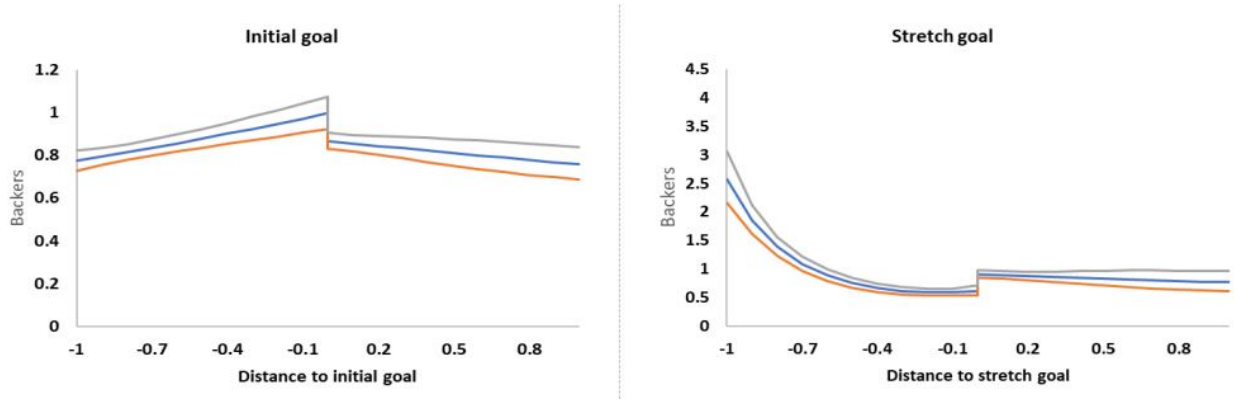

Figure 2 Fundraising performance before, upon, and after reaching a goal

be equal to 1 while $(goal_{pt}) \times distance_{pt}^{po}$ will be equal to 0, and vice versa. Thus, β_1 represents the trend before reaching the goal (*before_goal*) while β_2 represents the trend after reaching the goal (*after_goal*). The variable $goal_{pt}$ indicates whether project p has reached its goal (initial goal or stretch goal) at time t with estimating the instantaneous effect of reaching the goal. We also add control variables similar to those in our main analysis. To illustrate graphically the funding pattern around different goals, we compute the conditional mean function of number of backers given various distances measures from the focal goal (Goes et al. 2016). Standard errors at 95% confidence intervals are derived using the delta method. Although projects can adopt several stretch goals, due to data availability (few projects reach their third goal, or their second stretch goal), we focus on two goals, the initial funding goal and the first stretch goal.

Table 5 reports the results from the analysis of the fundraising performance around goal attainment (for both the initial goal and stretch goal). Models 1 to 3 show the results for the initial goal. Specifically, the results of Model 1 indicate an increasing trend before goal attainment (β of *before_goal* = 0.41, $p < .001$, Model 1), followed by an immediate drop when the project reaches the goal (β of *goal* = -0.54, $p < .001$, Model 1) and a decreasing trend after goal attainment (β of *after_goal* =-0.11, $p < 0.001$, Model 1). Models 2 and 3 reports the results with quadratic and cubic orders of predictors and the results are consistent with Model 1. To illustrate the above results, we plot the conditional mean function of outcome at various levels of distance to the initial goal with 95% confidence intervals in the left panel of Figure 2. As the left panel of Figure 2 shows, it can be seen that fundraising performance exhibits an increase before goal attainment. However, it drops once the goal is achieved and then continues on a decreasing trend.

Models 4 to 6 of Table 5 report the results for the stretch goal. Here, we consider projects that reached their initial goal but did not reach their third goal or did not have a third goal. Projects that never reached their initial goal are excluded because no observation on their fundraising performance is available in this range. The results show a different pattern from that of the initial

goal. Interestingly, the results of Model 4 show that upon stretch goal attainment (which means when uncertainty drops), there is an immediate increase in fundraising performance (β of *goal* = 0.43, $p < .001$, Model 4), confirming that as uncertainty diminishes, investors react more and more positively to stretch goals. Besides the positive effect of goal, we observed a negative and significant trend before stretch goal attainment (β of *before_goal* = -1.19, $p < .001$, Model 4), as well as a negative and significant trend after stretch goal attainment (β of *after_goal* = -0.09, $p < .001$, Model 4). Although we observe a negative trend after stretch goal attainment, which is consistent with reduced excitement after goal attainment (Goes et al. 2016, Kuppuswamy and Bayus 2017), we notice that the coefficient of *after_goal* is smaller than that of *before_goal*, suggesting that the positive reaction observed after stretch goal attainment helps mitigate the already downward fundraising trend. Results remained similar in Models 5 and 6 with the quadratic and cubic model specification. These results confirmed uncertainty as an important driver of investors' reaction to entrepreneurs' effectuation strategy. To illustrate the above results, we plot the conditional mean function of outcome at various levels of distance to the stretch goal with 95% confidence intervals in the right panel of Figure 2. As the right panel of Figure 2 shows, while we observe a downward trend before stretch goal attainment, the trend becomes less steep as a project gets closer to stretch goal attainment. The fundraising performance even increases upon goal attainment and after that, we observe a less sharp decreasing trend in comparison to the period prior attainment. We attribute the increase around stretch goal attainment to a simultaneous decrease in perceived uncertainty and an increase in excitement. Proximity to goal attainment has been shown to elevate investors' excitement around a venture and to induce more commitment (Kivetz et al. 2006, Goes et al. 2016, Kuppuswamy and Bayus 2017). Thus, it confirms that as uncertainty diminishes (getting closer to and reaching the stretch goal), stretch goals demonstrate the potential for a positive influence on investors.

Table 5. Results from the analysis of the fundraising performance around goal attainment

	Model1	Model 2	Model 3	Model 4	Model 5	Model 6
	Focal goal=First goal			Foca lgoal=Stretch goal		
goal	-0.54***	-0.53***	-0.55***	0.43***	0.13*	0.32***
	(0.03)	(0.04)	(0.04)	(0.06)	(0.09)	(0.12)
before_goal	0.41***	0.38***	0.58***	-1.19***	0.61	-2.54***
	(0.05)	(0.06)	(0.10)	(0.12)	(0.34)	(0.86)
before_goal^2		-0.05	-0.01		1.85***	-5.63***
		(0.05)	(0.06)		(0.33)	(1.86)
before_goal^3			-0.18*			-4.88***
			(0.07)			(1.18)

after_goal	-0.11***	-0.16*	-0.40*	-0.09***	-0.14**	0.15
	(0.03)	(0.10)	(0.21)	(0.02)	(0.05)	(0.10)
after_goal^2		0.03	0.40		0.01	-0.09***
		(0.06)	(0.30)		(0.01)	(0.03)
after_goal^3			-0.14			0.01***
			(0.00)			(0.00)
cum_backers	-0.04***	-0.04***	-0.03**	0.02	0.08***	0.12***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)
cum_com_message	0.18***	0.19***	0.18***	0.11***	0.09***	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
competing_project	-0.00**	-0.00**	-0.00**	0.02***	0.03***	0.02***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.06)	(0.01)
daystogo	-1.07***	-1.07***	-1.06***	-1.14***	-1.13***	-1.11***
	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)
daystogo^2	0.22***	0.22***	0.22***	0.23***	0.23***	0.23***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	1.61***	1.62***	1.59***	0.99***	1.08***	0.73**
	(0.10)	(0.11)	(0.11)	(0.28)	(0.28)	(0.29)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of project-day obs	31,147	31,147	31,147	4,394	4,394	4,394
No. of projects	796	796	796	90	90	90
AIC	81,130.2	81,133.0	81,129.2	21,178.6	21,151.9	21,128.9
BIC	81,388.9	81,408.4	81,421.3	21,376.6	21,362.7	21,352.4

Notes. Standard errors in parentheses.
**p.001, **p.01, *p.05, +p.10(two-tailed tests).

6. Supplementary Analyses

To corroborate that the negative impact of stretch goal adoption is driven by a mechanism related to how investors perceive the uncertainty of a project, we expect that contextual factors that diminish (increase) this uncertainty will alleviate (aggravate) the negative effect observed in our main analysis. On top of providing a better understanding of the impact of stretch goal adoption on fundraising performance, these additional tests aim to strengthen our causal identification and make it more convincing (He et al. 2021).

Late Adoption

As shown previously, uncertainty surrounding a project will tend to reduce as a project unfolds and gets closer to its funding target. Projects in their early stage, i.e. far from their initial goal, are perceived to have higher uncertainty than projects in their later stage, i.e. closer to their initial goal (Kuppuswamy and Bayus 2017). Because projects in later stage have already shown a good performance (later stage relative to the amount collected rather than the number of days

remaining), stretch goal adoption may appear to be less disruptive. Sitkin et al. (2011) have stated that stretch goals are perceived to be less disruptive when the past performance is good. Therefore, we believe that adopting stretch goals in the later stage of a project can reduce the initial negative effect of stretch goal adoption, whereas doing so in the early stage can worsen the same initial negative effect. We constructed our variable *late_adoption* based on the progress achieved relative to the initial goal. The variable takes the value of 1 if the project had reached 80% of its initial funding goal when adopting stretch goals, and 0 otherwise. We later conducted a robustness check by computing *late_adoption* as a continuous variable instead of a dummy, and results remained consistent.

Communicative Messages

To mitigate the uncertainty often faced by entrepreneurs in their fundraising, prior studies have suggested that communicative messages such as comments from investors and replies from entrepreneurs can be seen a signal of project quality by potential investors and reduce their perceived uncertainty (Colombo et al. 2015, Bapna 2019, Xiao et al. 2021). Moreover, the value of goal commitment is influenced by the value others place on attaining those goals (Klein et al. 2020). More communicative messages can be perceived as more commitment from other investors and thus would further reduce the concern of commitment of the focal investor over uncertainty. Thus, we test if a higher value of a project's existing communicative messages at the time of stretch goal adoption can mitigate the initial negative effect. We constructed this variable, *com_message*, by counting the number of comments and replies when a project adopted stretch goals and the variable was log-transformed (Xiao et al. 2021).

Low Budget

Because the all-or-nothing mechanism exacerbates the uncertainty observed in online crowdfunding, there have been suggestions that entrepreneurs set lower goals intentionally to avoid the risk of not receiving any fund and use stretch goal adoption to reach their real intended target (Kuppuswamy and Bayus 2017). However, no empirical evidence has shown the impact of this strategy. We examine how such strategy interacts with stretch goal adoption in influencing fundraising performance. We believe that adopting stretch goals while having a low budget can increase uncertainty because in such case, stretch goals are likely to be perceived as more difficult. We constructed a variable dummy variable *low_bugdet* by assigning the value of 1 to projects whose initial target amount falls in the lowest 20% percentile in their categories, and 0 otherwise. We later varied the threshold to 10% and 30%, and results remained consistent.

Technology Category

At last, as stated before, although fundraising is marred with uncertainty, technology projects often face a higher uncertainty than other projects such as community projects (Chemla et al. 2020). Technology projects tend to deliver individual products or services whereas community projects tend to deliver outcomes that benefit a certain group of people or community (Mollick 2014). Technology projects often face unforeseen technological uncertainties and discontinuities (Dong 2021) which increase the perceived uncertainty of these projects in comparison to their counterpart in the community category. Thus, we contrasted the effects of stretch goal adoption between categories. A dummy variable, *technology*, takes the value of 1 for technology projects and 0 for community projects.

Analyses and Results

We use the following model to test our moderators' effect on the relationship between stretch goal adoption and fundraising performance:

$$backers_{pt} = \beta_0 + \beta_1 + \beta_1 stretch\_goal_{pt} \times Moderator + \sum_{po=1}^{po} \beta_{3,po} \times duration_{pt}^{po} + \sum_{po=1}^{po} \beta_{4,po} \times stretch\_goal_{pt} \times duration_{pt}^{po} + \beta_5 control_{pt} + T_s + \varepsilon_{pt} \quad (3)$$

where the coefficient β_2 represents the effect of the various moderators that we examine.

Table 6 presents the results of our supplementary analyses. Models 1 to 3 report the results of the interaction between stretch goal adoption and late adoption, shows that the coefficient is positive and significant (for example, β of $stretch\_goal_{pt} \times late\_adoption = 0.87$, $p < .001$, Model 1). In unreported results, we created a variable, *early stretch goal adoption*, and it has a negative and significant effect on *backers*. These results indicates that late adoption can help reduce the initial negative effect of stretch goal adoption as projects at this stage typically face less uncertainty than in their earlier stage.

Models 4 to 6 in Table 6 report the results of the interaction between stretch goal adoption and communicative messages. The coefficient of this interaction term is positive and significant (β of $stretch\_goal_{pt} \times com\_message = 0.31$, $p < .001$, Model 4). This is not surprising considering that prior literature has suggested that greater communication can positively boost goal impact (Locke and Latham 2006). Therefore, greater interaction on the project page seen via comments and replies can attenuate stretch goal adoption's initial negative impact.

Models 7 to 9 in Table 6 present the results of the interaction between stretch goal adoption and low budget, showing that the coefficient is negative and significant (for example, β of $stretch\_goal_{pt} \times low\_budget$ = -0.67, $p < .001$, Model 7). In other words, projects with low budget incur a severe

initial negative effect than their counterparts. This finding suggests that intentionally setting a lower initial goal (in comparison with other projects in the same category) in the hope of stretching the goal to collect more funds may backfire by worsening the initial negative effect of stretch goal adoption.

At last, Models 10 to 11 in Table 6 report the results of whether technology projects and community projects are differently affected by stretch goal adoption. We found that technology projects will incur a greater initial negative effect compared to community projects (for example, β of $stretch\_goal_{pt} \times technology$= -0.66, $p < .001$, Model 10). In addition, the above results for all moderators are consistent across the quadratic and cubic model specifications. These findings also lend support to the mechanism of our Hypothesis 1b that uncertainty is an important driver of investors reactions to stretch goal adoption.

Table 6. Results of analysis with moderators predicting backing

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	Moderator variable = Late adoption			Moderator variable = Communicative messages			Moderator variable = Low budget			Moderator variable = Technology		
stretch_goal	-1.39***	-1.26***	-0.99***	-1.27***	-1.17***	-0.94***	-1.07***	-0.99***	-0.76***	-1.27***	-1.17***	-0.94***
	(0.05)	(0.06)	(0.07)	(0.05)	(0.06)	(0.07)	(0.05)	(0.06)	(0.07)	(0.06)	(0.06)	(0.07)
stretch_goal × late_adoption	0.87***	0.77***	0.72***									
	(0.06)	(0.06)	(0.06)									
stretch_goal × com_message				0.31***	0.29***	0.29***						
				(0.04)	(0.04)	(0.04)						
stretch_goal × low_budget							-0.67***	-0.62***	-0.60***			
							(0.13)	(0.13)	(0.13)			
stretch_goal × technology										-0.66***	-0.67***	-0.67***
										(0.06)	(0.06)	(0.06)
duration	0.03***	0.12***	0.13***	0.04***	0.13***	0.17***	0.04***	0.14***	0.17***	0.04***	0.14***	0.17***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)
$duration^2$		0.00***	0.00*		0.00***	0.00***		0.00***	0.00***		0.00***	0.00***
		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)		(0.000)	(0.00)
$duration^3$			0.00			0.00*			0.00			0.00
			(0.00)			(0.00)			(0.00)			(0.00)
stretch_goal × duration	-0.03***	-0.17***	-0.25***	-0.04***	-0.19***	-0.31***	-0.04***	-0.20***	-0.30***	-0.04***	-0.19***	-0.30***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)
stretch_goal × $duration^2$		-0.00***	0.00		-0.00***	0.00		-0.00***	-0.00		-0.00***	-0.00
		(0.00)	(0.01)		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
stretch_goal × $duration^3$			-0.00***			-0.00***			-0.00***			-0.00***
			(0.00)			(0.00)			(0.00)			(0.00)
cum_backers	-0.06***	-0.03*	-0.02	-0.07***	-0.03*	-0.02	-0.08***	-0.04***	-0.03***	-0.09***	-0.05***	-0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
cum_com_message	0.07***	0.08***	0.07***	-0.12**	-0.11*	-0.12**	0.14***	0.14***	0.13***	0.22***	0.22***	0.21***
	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
competing_project	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02**	0.02*	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

daystogo	-1.39***	-1.14***	-1.19***	-1.31***	-1.05***	-1.11***	-1.37***	-1.10***	-1.16***	-1.39***	-1.13***	-1.19***
	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)
daystogo^2	0.32***	0.27***	0.29***	0.29***	0.24***	0.25***	0.31***	0.25***	0.27***	0.32***	0.27***	0.28***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	2.13***	2.01***	1.94***	2.27***	2.19***	2.17***	2.31***	2.21***	2.17***	2.43***	2.44***	2.43***
	(0.23)	(0.23)	(0.23)	(0.24)	(0.24)	(0.24)	(0.23)	(0.23)	(0.23)	(0.23)	(0.24)	(0.24)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of project-day obs	6,246	6,246	6,246	6,246	6,246	6,246	6,246	6,246	6,246	6,246	6,246	6,246
No. of projects	138	138	138	138	138	138	138	138	138	138	138	138
AIC	23,551.1	23,232.5	23,132.6	23,707.7	23,351.4	23,230.1	23,739.7	23,381.7	23,262.5	23,633.0	23,257.2	23,135.3
BIC	23,766.7	23,461.6	23,375.2	23,923.4	23,580.6	23,472.8	23,955.3	23,610.8	23,505.1	23,848.6	23,486.4	23,378.0

Notes. Standard errors in parentheses.
** p < .001, ** p < .01, * p < .05, + p < .10 (two-tailed tests).

As robustness checks, we employed alternative measures for two moderators mentioned above, *late_adoption* and *low_budget*. For *late_adoption* variable, we changed the variable and considered it as a continuous variable. For *low_budget*, we varied the threshold and considered projects in the lowest 10% (reported) and 30% (unreported) percentile. Repeating our analysis with these specifications, the results obtained are consistent with our prior results and are presented in Table 7.

Table 7. Results of analysis using alternative measurements for moderators

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Moderator variable=Late adoption (as a continuous variable)			Moderator variable=Low budget (lowest10%percentile)		
stretch_goal	-1.17***	-1.08***	-0.84***	-1.03***	-0.96***	-0.73***
	(0.05)	(0.06)	(0.07)	(0.05)	(0.06)	(0.07)
stretch_goal×late_adoption	0.03***	0.02***	0.02***			
	(0.00)	(0.00)	(0.00)			
stretch_goal×low_budget				-0.69***	-0.66***	-0.64***
				(0.09)	(0.09)	(0.09)
duration	0.04***	0.14***	0.17***	0.04***	0.14***	0.17***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)
$duration^2$		0.00***	0.00***		0.00***	0.00***
		(0.00)	(0.00)		(0.00)	(0.00)
$duration^3$			0.00			0.00
			(0.00)			(0.00)
stretch_goal×duration	-0.04***	-0.20***	-0.30***	-0.04***	-0.20***	-0.30***
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)
stretch_goal×$duration^2$		-0.00***	-0.00		-0.00***	-0.00
		(0.00)	(0.00)		(0.00)	(0.00)
stretch_goal×$duration^3$			-0.00***			-0.00***
			(0.00)			(0.00)
cum_backers	-0.07***	-0.04**	-0.03*	-0.08***	-0.04***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
cum_com_message	0.12***	0.12***	0.12***	0.12***	0.12***	0.11***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
competing_project	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
daystogo	-1.39***	-1.12***	-1.18***	-1.36***	-1.09***	-1.15***
	(0.06)	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)
$daystogo^2$	0.32***	0.26***	0.27***	0.30***	0.25***	0.26***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	2.26***	2.15***	2.12***	2.33***	2.22***	2.18***
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)

Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of project-day obs	6,246	6,246	6,246	6,246	6,246	6,246
No. of projects	138	138	138	138	138	138
AIC	23,748.9	23,393.6	23,277.8	23,703.3	23,347.3	23,229.7
BIC	23,964.6	23,622.8	23,520.4	23,919.0	23,576.5	23,472.3

Notes. Standard errors in parentheses.
**p.001, **p.01, *p.05, +p.10 (two-tailed tests).

7. Discussion and Conclusion

Effectuation has been acknowledged as a prevalent entrepreneurial strategy under uncertainty (Jiang and Rüling 2019, Camuffo et al. 2020). However, little has been done so far in understanding how this strategy affects entrepreneurial ventures when securing funds. To the best of our knowledge, our study is among the first attempts to evaluate how investors react to entrepreneurs' effectuation strategies, specifically stretch goal adoption. We adopted a within-platform identification strategy as well as a RD design to establish the causal effect of entrepreneurs' stretch goal adoption on investors' funding decisions. We find that, initially, stretch goal adoption negatively impacts a project's fundraising performance because of the increase in uncertainty it engenders. Interestingly, we find that as a project campaign unfolds, not only the negative effect diminishes, but the effect turns to be positive when the project reaches the stretch goal. We attribute this finding to uncertainty to the extent that when it is high, it negatively influences investors' decision and when it is low, its effect reduces or vanishes. Furthermore, when uncertainty becomes low and because the fear of failing has reduced, stretch goals elicit excitement and commitment from investors, explaining the positive effect observed around stretch goal attainment. Supplementary analysis further reveals that this negative effect is strengthened by uncertainty-enlarging factors, such as when a project sets a low initial funding goal or is characterized by high uncertainty (technology projects); and weakened by uncertainty-diminishing factors, such as adopting stretch goal during more advanced stages or having more social interaction on the project page characterized by the number of comments by investors and replies from the entrepreneur.

Theoretical Contributions

These findings make several important contributions to the literature. First, we contribute to the literature on effectuation. As far as we are aware, our study is the first to attempt to theorize and examine empirically the effect of an important effectuation strategy (i.e., stretch goal adoption) on investors' behavior. As mentioned, many of the earlier studies in this literature have focused on examining why entrepreneurs adopt effectuation strategies and how entrepreneurs' effectuation strategies unfold (Saravasthy 2001, Brettel et al. 2012, Smolka et al. 2018). However, there has been

a lack in our understanding of how investors react to such strategies. By showing how investors react in the face of an entrepreneur's stretch goal adoption, we enrich this literature by shedding light on a long-neglected aspect of the entrepreneur journey, investors' reaction. Furthermore, the study unveils one important mechanism through which stretch goal adoption influences fundraising performance: uncertainty surrounding the venture.

In addition, we respond to calls to incorporate temporality when studying effectuation (Jiang and Rüling 2019). Past studies often have evaluated effectuation at a single point in time and thus ignored the temporality of the venture (McKelvie et al. 2020). It is particularly problematic for effectuation studies because actions taken by entrepreneurs using an effectuation strategy and their consequences are expected to change and vary over time (McKelvie et al. 2020). Furthermore, there have been calls in the literature to incorporate time when analyzing effectuation strategies (Jiang and Rüling 2019, McKelvie et al. 2020). Thus, by showing how the effect of effectuation on external investors changes over the course of a venture, our study adds further insights into the role played by time in the scenery of the literature on effectuation.

Second, we also contribute to the literature on the paradoxical nature of stretch goals. Unlike prior studies suggesting either increased or decreased uncertainty caused by stretch goals, we find an even more interesting pattern; that is, on the one hand, stretch goals can increase uncertainty but on the other hand, they may excite investors (as shown in Figure 2). Our findings shows that uncertainty dominates when a project achieves its first goal and stretch goal adoption thus leads to a negative effect on fundraising. In contrast, when a stretch goal is achieved, not only uncertainty diminishes but also excitement dominates in this stage, leading to a positive effect of stretch goal adoption. Our study thus is among the first to demonstrate the double-edged sword nature of stretch goals (Sitkin et al. 2011, Ahmadi et al. 2022) and we believe that our study helps shed more light on the mixed findings about stretch goals' impact on performance. Future research can further improve the understanding by examining when and how it is best to adopt stretch goals so as to bear less negative consequences.

Third, the study extends the literature on crowdfunding that examines entrepreneurs' optimal project design strategies to get a successful fundraising (Jiang et al. 2019, Yang et al. 2020, Xiao et al. 2021, Cornelis et al. 2022), as the prior literature has not examined the effect of entrepreneurs' goal setting design on potential investors' contribution. We join Yang et al. (2020) in showing that an entrepreneur's project design strategy does not have an uniform effect on fundraising performance but rather it has a varying effect during the course of the fundraising campaign. In our case, we show that the effect goes from negative in the early period of adoption to positive once a project has reached a certain stretch goal in its fundraising. In addition, our findings highlight that project design strategies should not neglect investors' perception, in particular perception of uncertainty, as it may inhibit the effectiveness of project design strategies.

Managerial Implications

Practically, our study provides important implications for entrepreneurs who have adopted or plan to adopt an effectuation strategy. Based on our findings, entrepreneurs should focus on reducing the perceived uncertainty surrounding their ventures by enhancing cues that alleviate this uncertainty and thus reassure potential investors. For example, they may choose to adopt stretch goals, or at least to make it public, once their ventures have already garnered some supports, or if they are running their ventures on an online platform, increase their social interaction on the venture page. With these approaches, entrepreneurs can mitigate the initial negative impact of stretch goal adoption and harness its benefits as their ventures unfold. We also show how entrepreneurs should be mindful of their stage of goal attainment when implementing effectuation strategies as investors may shift from being concerned about uncertainty to being excited about the entrepreneurs' achievements upon certain goal attainment (Frese et al. 2020).

Limitations and Future Research

That being said, our findings need to be understood in light of some limitations. Due to data limitation, our approach cannot measure and quantify the overall effect of stretch goal adoption by comparing entrepreneurs who chose effectuation as a mode of entrepreneurship and those who do not. Future research can use a field experiment to obtain comparable projects and assess the overall impact of stretch goal adoption on fundraising performance. Furthermore, in our analysis on the pattern of fundraising performance around different funding goals, we were only able to make estimations with the initial and the first stretch goal. This is because in our setting, empirical estimations can only be made on projects that were able to reach the goal of interest, and the number of projects reaching their third goal (second stretch goal) and above was extremely small. Nevertheless, our methods can be easily reproduced when much more data is available. In addition, using more granular data, for example investors' heterogeneity data, future studies can investigate how stretch goal adoption affects investors differently. Do different investors react differently to stretch goal adoption by entrepreneurs? Which investors react positively, or which investors react negatively? Combined together with our findings, it would offer a more holistic understanding of how the reactions of different investors are shaped by entrepreneurs' adoption of effectuation strategies.

Conclusion

Although the literature has acknowledged the paradoxical consequences of stretch goals (Sitkin et al. 2011, Ahmadi et al. 2022), the question of how their adoption by entrepreneurs as an effectuation strategy affects investors decision has remained unaddressed. We investigated this question using data from a crowdfunding platform and our findings revealed that stretch goal adoption

initially undermines fundraising performance. We showed that investors' reaction is driven by perceived uncertainty, which increases when stretch goals are adopted. Paradoxically, we further found that as uncertainty reduces upon certain goal attainment, stretch goal adoption has a positive effect on fundraising performance. We further identified contingency factors that positively or negatively moderate the initial negative effect of stretch goal adoption. Our findings provide rich implications for researchers and entrepreneurs by shedding light on how entrepreneurs' effectuation strategies can have countervailing consequences on important external resource providers.

References

Ahlers GK, Cumming D, Günther C, Schweizer D (2015) Signaling in equity crowdfunding. *Entrep. Theory. Pract.* **39**(4) 955–980.

Ahmadi S, Jansen JJ, Eggers J (2022) Using stretch goals for idea generation among employees: One size does not fit all!. *Organ. Sci.* **33**(2) 671–687.

Anglin AH, Courtney C, Allison TH (2022) Venturing for others, subject to role expectations? A role congruity theory approach to social venture crowd funding. *Entrep. Theory. Pract.* **46**(2) 421–448.

Bapna S (2019) Complementarity of signals in early-stage equity investment decisions: Evidence from a randomized field experiment. *Management Sci.* **65**(2) 933–952.

Bellavitis C, Cumming D, Vanacker T (2022) Ban, boom, and echo! Entrepreneurship and initial coin offerings. *Entrep. Theory. Pract.* **46**(5) 1136–1169.

Brettel M, Mauer R, Engelen A, Küpper D (2012) Corporate effectuation: Entrepreneurial action and its impact on r&d project performance. *J. Bus. Venturing* **27**(2) 167–184.

Burtch G, Ghose A, Wattal S (2015) The hidden cost of accommodating crowdfunder privacy preferences: A randomized field experiment. *Management Sci.* **61**(5) 949–962.

Burtch G, Ghose A, Wattal S (2016) Secret admirers: An empirical examination of information hiding and contribution dynamics in online crowdfunding. *Inform. Systems Res.* **27**(3) 478–496.

Burtch G, Hong Y, Liu D (2018) The role of provision points in online crowdfunding. *J. Management Inform. Systems* **35**(1) 117–144.

Camuffo A, Cordova A, Gambardella A, Spina C (2020) A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Sci.* **66**(2) 564–586.

Chemla G, Tinn K (2020) Learning through crowdfunding. *Management Sci.* **66**(5) 1783–1801.

Colombo MG, Franzoni C, Rossi–Lamastra C (2015) Internal social capital and the attraction of early contributions in crowdfunding. *Entrep. Theory. Pract.* **39**(1) 75–100.

Cornelis EF, Baker AM, Ahsan M (2022) Mitigating a crisis of confidence: The effect of crisis response strategies on reward-based crowdfunding success. *Strategic Entrep. J.* **16**(1) 67–96.

Dai H, Zhang DJ (2019) Prosocial goal pursuit in crowdfunding: Evidence from kickstarter. *J. Marketing Res.* **56**(3) 498–517.

Deligianni I, Voudouris I, Lioukas S (2017) Do effectuation processes shape the relationship between product diversification and performance in new ventures? *Entrep. Theory. Pract.* **41**(3) 349–377.

Dhanorkar S (2019) Environmental benefits of internet-enabled c2c closed-loop supply chains: A quasi-experimental study of craigslist. *Management Sci.* **65**(2) 660–680.

Domurath A, Patzelt H (2016) Entrepreneurs' assessments of early international entry: The role of foreign social ties, venture absorptive capacity, and generalized trust in others. *Entrep. Theory. Pract.* **40**(5) 1149–1177.

Dong JQ (2021) Technological choices under uncertainty: Does organizational aspiration matter? *Strategic Entrep. J.* **42**(5) 898–916.

Drover W, Wood MS, Payne GT (2014) The effects of perceived control on venture capitalist investment decisions: A configurational perspective. *Entrep. Theory. Pract.* **38**(4) 833–861.

Eddleston KA, Ladge JJ, Mitteness C, Balachandra L (2016) Do you see what i see? Signaling effects of gender and firm characteristics on financing entrepreneurial ventures. *Entrep. Theory. Pract.* **40**(3) 489–514.

Frese T, Geiger I, Dost F (2020) An empirical investigation of determinants of effectual and causal decision logics in online and high-tech start-up firms. *Small Business Econom.* **54**(3) 641–664.

Gao X (2018) Corporate cash hoarding: The role of just-in-time adoption. *Management Sci.* **64**(10) 4858–4876.

Gary MS, Yang MM, Yetton PW, Sterman JD (2017) Stretch goals and the distribution of organizational performance. *Organ. Sci.* **28**(3) 395–410.

Goes PB, Guo C, Lin M (2016) Do incentive hierarchies induce user effort? Evidence from an online knowledge exchange. *Inform. Systems Res.* **27**(3) 497–516.

Grimes M (2010) Strategic sensemaking within funding relationships: The effects of performance measurement on organizational identity in the social sector. *Entrep. Theory. Pract.* **34**(4) 763–783.

Gupta VK, Chiles TH, McMullen JS (2016) A process perspective on evaluating and conducting effectual entrepreneurship research. *Acad. Management Rev.* **41**(3) 540–544.

He C, Ozturk OC, Gu C, Silva-Risso JM (2021) The end of the express road for hybrid vehicles: Can governments' green product incentives backfire? *Marketing Sci.* **40**(1) 80–100.

Jiang L, Yin D, Liu D (2019) Can joy buy you money? The impact of the strength, duration, and phases of an entrepreneur's peak displayed joy on funding performance. *Acad. Management J.* **62**(6) 1848–1871.

Jiang Y, Rüling C-C (2019) Opening the black box of effectuation processes: Characteristics and dominant types. *Entrep. Theory. Pract.* **43**(1) 171–202.

Jiang Y, Tornikoski ET (2019) Perceived uncertainty and behavioral logic: Temporality and unanticipated consequences in the new venture creation process. *J. Bus. Venturing* **34**(1) 23–40.

Jiang Y, Ho Y-C, Yan X, Tan Y (2022) What's in a "username"? The effect of perceived anonymity on herding in crowdfunding. *Inform. Systems Res.* **33**(1) 1–17.

Jiang Z, Xu J, Gorlin M, Dhar R (2021) Beautiful and confident: How boosting self-perceived attractiveness reduces preference uncertainty in context-dependent choices. *J. Marketing Res.* **58**(5) 908–924.

Kerr S, Landauer S (2004) Using stretch goals to promote organizational effectiveness and personal growth: General electric and goldman sachs. *Acad. Management Perspect.* **18**(4) 134–138.

Kivetz R, Urminsky O, Zheng Y (2006) The goal-gradient hypothesis resurrected: Purchase acceleration, illusionary goal progress, and customer retention. *J. Marketing Res.* **43**(1) 39–58.

Klein HJ, Lount Jr RB, Park HM, Linford BJ (2020) When goals are known: The effects of audience relative status on goal commitment and performance. *J. Appl. Psych.* **105**(4) 372–389.

Kuppuswamy V, Bayus BL (2017) Does my contribution to your crowdfunding project matter? *J. Bus. Venturing* **32**(1) 72–89.

Le Breton–Miller I, Miller D (2006) Why do some family businesses out–compete? Governance, long–term orientations, and sustainable capability. *Entrep. Theory. Pract.* **30**(6) 731–746.

Lee DS, Lemieux T (2010) Regression discontinuity designs in economics. *J. Econom. Lit.* **48**(2) 281–355.

Lee SY, Qiu L, Whinston A (2018) Sentiment manipulation in online platforms: An analysis of movie tweets. *Production Oper. Management* **27**(3) 393–416.

Li Z, Jarvenpaa S (2015) Motivating it-mediated crowds: The effect of goal setting on project performance in online crowdfunding. *Available at SSRN 2672056*.

Litz RA (1997) The family firm's exclusion from business school research: Explaining the void; addressing the opportunity. *Entrep. Theory. Pract.* **21**(3) 55–71.

Liu LX, Sherman AE, Zhang Y (2014) The long-run role of the media: Evidence from initial public offerings. *Management Sci.* **60**(8) 1945–1964.

Locke EA, Latham GP (2006) New directions in goal-setting theory. *Current Directions Psych. Sci.* **15**(5) 265–268.

McKelvie A, Chandler GN, DeTienne DR, Johansson A (2020) The measurement of effectuation: Highlighting research tensions and opportunities for the future. *Small Business Econom.* **54**(3) 689–720.

Mollick E (2014) The dynamics of crowdfunding: An exploratory study. *J. Bus. Venturing* **29**(1) 1–16.

Pina e Cunha M, Giustiniano L, Rego A, Clegg S (2017) Mission impossible? The paradoxes of stretch goal setting. *Management Learn.* **48**(2) 140–157.

Proserpio D, Zervas G (2017) Online reputation management: Estimating the impact of management responses on consumer reviews. *Marketing Sci.* **36**(5) 645–665.

Pu J, Chen Y, Qiu L, Cheng HK (2020) Does identity disclosure help or hurt user content generation? Social presence, inhibition, and displacement effects. *Inform. Systems Res.* **31**(2) 297–322.

Sarasvathy SD (2001) Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Acad. Management Rev.* **26**(2) 243–263.

Sarasvathy SD, Dew N (2005) New market creation through transformation. *J. Evolutionary Econom.* **15**(5) 533–565.

Sitkin SB, See KE, Miller CC, Lawless MW, Carton AM (2011) The paradox of stretch goals: Organizations in pursuit of the seemingly impossible. *Acad. Management Rev.* **36**(3) 544–566.

Smolka KM, Verheul I, Burmeister–Lamp K, Heugens PP (2018) Get it together! Synergistic effects of causal and effectual decision–making logics on venture performance. *Entrep. Theory. Pract.* **42**(4) 571–604.

Taeuscher K, Bouncken R, Pesch R (2021) Gaining legitimacy by being different: Optimal distinctiveness in crowdfunding platforms. *Acad. Management J.* **64**(1) 149–179.

Van Mumford J, Zettinig P (2022) Co-creation in effectuation processes: A stakeholder perspective on commitment reasoning. *J. Bus. Venturing* **37**(4) 106209.

Vrecko D, Langer T (2013) What are investors willing to pay to customize their investment product? *Management Sci.* **59**(8) 1855–1870.

Xiao S, Ho YC, Che H (2021) Building the momentum: Information disclosure and herding in online crowdfunding. *Production Oper. Management* **30**(9) 3213–3230.

Xu Y, Ni J (2022) Entrepreneurial learning and disincentives in crowdfunding markets. *Management Sci.* **68**(9) 6819–6864.

Yang L, Wang Z, Hahn J (2020) Scarcity strategy in crowdfunding: An empirical exploration of reward limits. *Inform. Systems Res.* **31**(4) 1107–1131.