

Unleashing the Power of Visual Storytelling: Leveraging Cover Photo Narrativity to Attract Backers in Online Crowdfunding Platforms

Xiaochen Liu
Beijing Jiaotong University
xcliu@bjtu.edu.cn

Yu Jin
Nanjing University
yujin@nju.edu.cn

Ziru Li
Arizona State University
ziruli@thunderbird.asu.edu

Yulin Fang
The University of Hong Kong
yulfang@hku.edu.hk

Qiang Ye
University of Science and Technology of China
yeqiang@ustc.edu.cn

Abstract

Although extensive research exists on factors that affect crowdfunding campaign performance, little is known about how to attract potential backers and encourage them to visit a campaign's homepage. To address this gap, this study utilizes narrative transportation theory to investigate how the narrativity of a campaign's cover photo influences backers' participation and fundraising performance. Furthermore, the study examines whether the effectiveness of the narrative strategy varies depending on the type of project. Analysis of 2721 reward-based crowdfunding campaigns on kickstarter.com suggests that incorporating narrative elements is particularly useful for founders of intangible rewards. This study contributes to the crowdfunding literature by providing insights into how backers become aware of specific campaigns and by guiding campaign design for founders.

Keywords: Crowdfunding, Narrative Transportation, Fundraising Performance, Project Type

1. Introduction

The growth of internet finance and the accessibility of online crowdfunding has provided new avenues of financing for small and emerging business owners. By utilizing crowdfunding platforms, entrepreneurs are able to directly convey their innovative concepts to a wide audience, greatly reducing the barrier of entry to financing channels (Mollick, 2014). Despite these benefits, entrepreneurs participating in crowdfunding face intense competition. In a market with many options and

limited ability to process information, investors cannot analyze and compare all available information. Instead, they focus on certain elements and look for further details. In 2021, the foremost Kickstarter platform had approximately 3,000 active projects on average¹. On the other hand, visitors who have distinct IP addresses typically view just 3.5 pages per session². Even though the literature on crowdfunding has identified various approaches that are effective for entrepreneurs to enhance their crowdfunding campaign performance, such as pricing strategies, detailed descriptions, and the use of compelling media (Böckel et al., 2021), these signals are only observable to investors once they visit the campaign's homepage. Therefore, it is crucial to attract backers' attention at the search stage to have a prosperous campaign, which is often overlooked in current research.

In the reward-based crowdfunding market, investors follow a two-stage model to make investment decisions (as shown in Figure 1). First, users visiting the platform browse a search page displaying brief project information and form a consideration set. In the second stage, investors may visit the project homepage of interest to search for detailed project information and make investment decisions. As the market competition intensifies, attracting investors' homepage visit intention is a real challenge for reward-based crowdfunding.



Figure 1. Backers' Investment Decision Process in Two Stages

¹ Source: www.kickstarter.com/statistics

² Source: www.alexa.com

Mainstream crowdfunding platforms also follow a similar design, where founders can use a single image to provide a brief overview of their crowdfunding campaign. Visual cues have advantages over verbal signals, as they are automatic, parallel, require less effort, and are superior in terms of recall and recognition (Kim & Lennon, 2008). The effectiveness of commercial communication can be enhanced by providing more concrete and detailed messages, which can reduce individual information processing costs. Therefore, visual design is important for shaping backers' perceptions. In contrast to traditional e-commerce markets, where common photo design strategies include presentation angles, brand logos, discount information, and celebrity endorsements, a different approach is needed for crowdfunding campaigns (Xia et al., 2020). Instead, numerous founders employ a narrative strategy to demonstrate the significance and advantages of realizing their creative concepts. While this approach is increasingly popular, it remains ambiguous whether and how it leads to a noteworthy improvement in campaign performance. By drawing on the narrative transportation theory, this study primarily seeks to examine the impact of cover photo narrativity (i.e., *the extent to which a photo tells a story*) on backers' behavior.

Narrative transportation theory suggests that when people receive stories and try to interpret them, empathy and mental representation formation will allow individuals to immerse themselves in the described plot (Van Laer et al., 2014) and change their attitudes and intentions to reflect the story. In areas such as textual online reviews, digital advertising and social media posts (e.g. Lim & Childs, 2020), narrative transportation is believed to significantly attract consumers' attention and lead to positive evaluations. Beyond the above mechanisms, this study suggests that narrative transportation has the potential to address a key dilemma in the crowdfunding marketplace—greater psychological distance. Psychological distance refers to the degree of an individual's subjective feeling of closeness, acceptance, or alienation from an event (or object). The event is considered to be psychologically distant if it occurs in the distant future (temporal), in a distant place (spatial), on a group that is not very similar to one's own (social), or if the likelihood of its occurrence is very low (hypothetical).

Crowdfunding products/services are usually at an early stage of the development process, and even for those projects that have developed prototypes and are seeking funding to scale up production, there may be uncertainty about the time required to deliver the product/service. Unknown technical dilemmas,

rescheduling of business plans, or poor financing performance may trigger the failure or withdrawal of a crowdfunding project, reducing the likelihood of the project becoming a reality. In addition, due to the novelty of the product, it is often difficult for investors to call on past experience to imagine the value and impact of the product/service for themselves. As a result, the prototype product/service described in a crowdfunding project often appears psychologically distant to potential backers (Rose et al., 2021), which can inhibit their willingness to invest. Recent crowdfunding study emphasizes the need for fundraisers to stimulate the formation of vivid mental representations of investors through further actions (Rose et al., 2021). The theoretical mechanism analysis shows that the immersion generated by narrative transportation may shorten the psychological distance of investors in multiple dimensions (such as time, probability, and sociality), bringing positive effects on the project's performance. Through exploring the above mechanisms, this research aims to further expand the impact mechanism of narrative transportation in commercial scenarios. This article also discusses the moderating effects of search page text information volume and project type (tangible/intangible) on image narrativity.

2. Literature Review

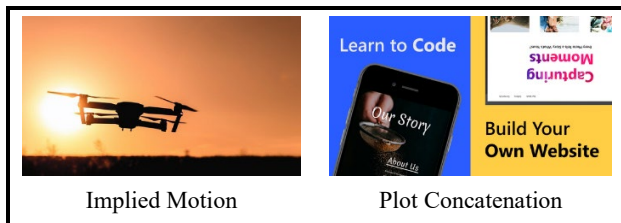
2.1. Theoretical Foundation

Narrative is a powerful form of communication that conveys a sequence of events or experiences and is commonly used in literature, movies, and video games. It engages cognitive processes and is a fundamental aspect of human communication. Narrative transportation theory in business research suggests that when people receive and interpret stories, they become emotionally transported through empathy and mental imagery. Compared to analytical explanations, narratives are more effective in engaging individuals and forming connections (Van Laer et al., 2014). Empathy refers to the audience's attempt to understand and share the emotions of the story's characters, while mental imagery occurs when the story's plot is so vivid that the audience feel as if they are personally experiencing the events. When individuals are transported by a narrative, they become completely absorbed in the story, often losing touch with reality and adjusting their attitudes and intentions to match the message conveyed by the story.

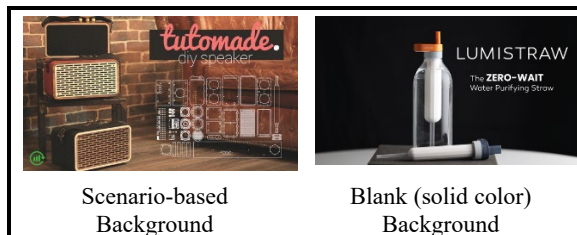
Table 1. Narrative elements in image design

Elements	Definition	Operationalization
Plot	Temporal sequence of events or chronological flow	Implied motion and plot concatenation
Setting	The context where the event occurs	Contextual background
Character	The characters (human or animal) in the story	Presence of humans or animals
Feelings	Dramatic intensity along with the plot	Presence of obvious emotions

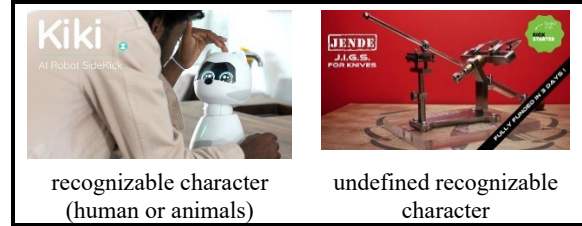
Previous research has identified essential components of a narrative, including a plot (a series of events), a setting, identifiable characters, and their emotional responses to the events (Thompson, 1997; Van Laer et al., 2014). This study aims to incorporate these narrative elements into visual design, as described in Table 1. However, a more detailed explanation is necessary for how to implement the temporal plot element in visual design since it is challenging for a single static photo to depict a sequence of events. Nevertheless, previous research on photography, art, and visual communication provides some insights. For instance, implied motion leads to the formation of a dynamic mental representation. This is achieved by activating pertinent neurons within the brain, which allows the viewer to perceive the continuous progression of an event (Freeberg & Gallese, 2007).



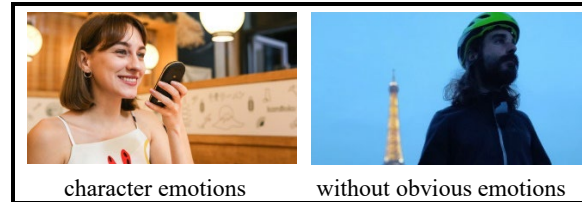
a. Temporal Plot in Static Image



b. Contextual Setting in Image



c. Identifiable Character in Image



d. Significant Emotion in Image

Figure 2. Temporal Plot in Static Image

As shown in the left image in Figure 2-a, the inclusion of flight movements in the image will make the viewer anticipate that the position of the drone will change in the next second. Founders can also create juxtaposed narratives, as shown in the right image in Figure 2-a, compressing the states of characters or objects before and after an event into a single image. This evokes a sense of temporal continuity in the audience's perception of the sequence of events. We adopted other elements (setting, character, feelings) from the literature and provide examples as shown in Figures 2-b, 2-c, and 2-d.

2.2. Hypotheses Development

2.2.1. Impacts of Cover Photo Narrativity

Textual narrative has been found to be highly effective for communication in various business contexts, with studies showing its positive impact on consumer persuasion and the usefulness of product reviews (Van Laer et al., 2014; Van Laer et al., 2019). This study hypothesizes that there will be a positive correlation between the level of narrativity in the cover image (i.e., how well it conveys a story) and the number of backers. Specifically, if the cover image includes more narrative elements, it is more likely that supporters will become invested in the storyline and adjust their attitudes and intentions to align with the narrative (Van Laer et al., 2014). This transportation will deeply and permanently influence supporters' attention, resulting in profound and lasting persuasion (Green & Brock, 2000).

Recent research has found a correlation between the level of abstraction of an event and the clarity of mental imagery it evokes (Lee et al., 2020). The closer

the event, the clearer the mental image. In the context of online crowdfunding, business ideas are still in the conceptual phase and have not yet been realized. This may lead investors to experience a greater psychological distance as they have to wait for several months for the project to be fulfilled and delivered, even if the campaign is successful. Therefore, it is essential for campaigns to use narrative transportation to stimulate the imagination and spark the interest of potential investors. This can help differentiate them from competitors and attract more prospective backers to their page.

H1: The degree of narrativity in the cover photo of a crowdfunding campaign increases the likelihood of attracting investors to the project.

2.2.2. The Regulatory Role of Text Information

The resource-matching hypothesis suggests that how people process information depends on two fundamental concepts: the resources they have available and the resources required to understand the information. Available resources refer to an individual's cognitive capacity for a particular type of information, while required resources correspond to the cognitive capacity needed to comprehend that information (Larsen et al., 2004). Additionally, the theory of narrative transportation suggests that the extent to which a person can comprehend and process the plot of a story influences the level of narrative transportation they experience (Van Laer et al., 2014).

Due to the high level of innovation found in crowdfunding projects, such as functional and appearance innovation, it can be difficult for investors to fully understand a project's essential characteristics (Liu et al., 2022). This can lead to a mismatch between the investors' interpretation of the narrative and the project initiators' intended presentation. To address this challenge, this research investigates how the amount of text information displayed on search pages can moderate the accuracy and clarity of semantic content in crowdfunding projects, building on the effectiveness of text in conveying precise and unambiguous information.

Research suggests that visual information is more easily processed during the sensory information encoding than textual information (Kim & Lennon, 2008). Visual cues can convey detailed and specific information efficiently. However, during the semantic information encoding process, text can provide precise and direct statements about product features, enabling potential investors to quickly and easily acquire a clear understanding of the product (Kim & Lennon, 2008). Project founders can convey the key features and value of their product on the search page by using descriptive titles and summaries, and by incorporating

text into cover images. The amount of text displayed on the search page can vary depending on the strategies used by project founders. Research suggests that if a project does not provide enough semantic information for investors to understand the product or service, they may need to put in more effort to comprehend the narrative. This can result in a disrupted narrative or reduced effectiveness (Van Laer et al., 2014). When investors read the project description, they can develop an initial understanding of the product or service, making connections between the narrative and their own experiences based on keywords. This can increase the likelihood of them engaging with the project and immersing themselves in the scenario presented (Slater, 2002). Accordingly, the following hypothesis is developed:

H2: The amount of text information featured on the cover of crowdfunding projects positively moderates the relationship between cover photo narrativity and campaign performance.

2.2.3. Moderating Effects of Campaign Type

We also explore the heterogeneous impact of image narrativity on different types of campaigns. Crowdfunding is a platform that is open to a wide range of creative campaigns seeking funding, including those involving tangible products like equipment, food, and crafts, as well as intangible experiences such as software, music, and films. However, founders face challenges in conveying information about intangible rewards through traditional strategies due to the lack of visual cues from their design, materials, and appearance. The concept of intangibility creates a greater informational distance between the campaign and potential backers. Informational distance refers to the gap or disparity in the amount of information, knowledge, facts, and experiences between the source and the audience (Fiedler, 2007). Therefore, our hypothesis suggests that the correlation between image narrativity and the level of engagement of backers will be more significant for campaigns that offer intangible rewards compared to campaigns that offer tangible rewards.

H3: The positive association between cover photo narrativity and campaign performance will be stronger for intangible campaigns than for tangible campaigns.

3. Methodology

3.1. Data Collection

To collect empirical data, the researchers utilized a web crawler to gather publicly available information from Kickstarter, the largest and most comprehensive reward-based crowdfunding platform, on technology

campaigns launched in 2019. Since technology is the most extensive and popular category on Kickstarter, encompassing both tangible and intangible campaigns, it provides an opportunity to examine moderating effects. The dataset was limited to campaigns with funding targets between \$500 and \$500,000, resulting in a sample of 2,721 campaigns after eliminating outliers.

3.2. Measurement

The objective of this study is to investigate how cover image design can affect backers' participation behaviors and their level of engagement with crowdfunding campaigns. The number of backers (referred to as Backers) is the primary dependent variable, while the financing amount (referred to as Pledges) is used as an alternative measure in robustness checks. The independent variable, NarrElements, represents the number of narrative elements present in the cover image, which indicates the level of image narrativity. The study also examines the impact of text information, including project titles and promotional slogans, on the search page. The text featured in the cover images was extracted using Optical Character Recognition (OCR), and the WordLens variable calculated the total word count. Additional factors that could affect backers' evaluation were also considered, including the presence of temporal plot, setting, and identifiable characters in the cover image. The study also utilized machine learning techniques to identify the emotions depicted in the image. Intangible campaigns were marked as 1 if they belonged to software, apps, and web subcategories, and marked as 0 if they fell under other tangible subcategories. The overall length of textual information, including the title, blurb, and text within the image, was controlled for, and the NIMA algorithm was used to calculate the aesthetic score of the images, accounting for pixel-level features such as hue, saturation, and brightness. Campaign design and founder features displayed on the homepage were integrated as control variables. Table 2 provides a definition and statistical description of these variables.

Table 2. Definition and statistic description of variables

	Variables	Mean	Std.Dev
DV's	<i>Backers</i>	210.69	795.56
	<i>Pledges</i>	36202.69	205188.4
IV's	<i>NarrElements</i>	0.775	1.10
	<i>Intangible</i>	0.44	0.50
Controls Search List Page	<i>WordLens</i>	26.42	11.69
	<i>Aesthetics</i>	5.11	0.35
	<i>WarmRatio</i>	0.37	0.31

Controls Homepage	<i>Saturation</i>	0.30	0.21
	<i>Lightness</i>	0.55	0.23
	<i>Goal</i>	34486.98	58204.65
	<i>Duration</i>	38.31	13.22
	<i>Options</i>	6.39	4.29
	<i>RewardPrice</i>	421.35	837.48
	<i>ImageNum</i>	15.61	19.60
	<i>Video</i>	1.56	1.92
	<i>StoryWords</i>	660.21	564.74
	<i>Created</i>	1.41	1.91

4. Results

4.1. Main Effects

This section examines the impact of image narrativity (NarrElements) on investor participation, while also exploring the moderating role of text information. Additionally, the section employs grouped regression analysis to examine the moderating effect of project categories. Equation (1) presents the regression model used for analysis:

$$\begin{aligned}
 Backers_i = & \alpha + \beta_1 NarrElements_i & (1) \\
 & + \beta_2 WordLens_i \\
 & + \beta_3 NarrElements_i \\
 & \times WordLens_i + \gamma X_i + \varepsilon_i
 \end{aligned}$$

Backers_i denotes the total number of investors attracted to the project. To demonstrate the economic significance of the narrative strategy, an alternative dependent variable - project financing amount (Pledges) - was used for robustness testing. The study used a comparable metric by converting the project's financing amount into US dollars using real-time exchange rates at the time of release. The regression model comprises β_1 , which indicates the impact of image narrativity, and β_2 , which represents the impact of text information volume. A moderating term is created to examine the interaction between image narrativity and text information volume, with β_3 denoting the effect of the interaction term. Control variables, such as other design features of the search page, project homepage information features, and project initiator features, are represented by X_i . Moreover, a set of dummy variables representing months is created to account for time effects, and count variables are transformed using natural logarithms in the regression to ensure the validity of the estimates.

The proposed research hypotheses were empirically tested using OLS regression. The results, as shown in Table 3 column 1, are consistent with Hypothesis 1, showing that there is a positive association between the number of narrative elements in the campaign cover photo and backers' participation

behavior ($\beta=0.103$, $p<0.01$). The results of the regression also validate the substantial impacts of textual information and cover image aesthetics, emphasizing the vital role of the search list stage in the decision-making process of investors. Furthermore, the disclosed amount of textual information on the search page ($\beta=0.288$, $p<0.01$) has also been demonstrated to have a significant positive impact. Moreover, Model 2 indicates that the amount of textual information can significantly enhance the positive impacts of image narrativity ($\beta=0.124$, $p<0.05$), underscoring the necessity of incorporating semantic information about the core attributes of the project in the formation of investors' narrative transportation.

Given that the intangibility of the project might exert significant moderating effects on several variables other than the independent variable, we applied Fisher's exact test to analyze the moderating effect (Fisher, 1992). As shown in Models 3 and 4 in Table 3, the results reveal notable differences in the effects of most control variables between groups, validating our decision to utilize Fisher's exact test. Furthermore, the difference in coefficients for NarrElements is statistically significant (Difference=0.085, $p<0.05$), indicating that intangible campaigns benefit more from higher image narrativity compared to tangible campaigns.

Table 3. Main Regression Results

	Model 1	Model 2	Model 3 <i>Tangible</i>	Model 4 <i>Intangible</i>
<i>NarrElements</i>	0.103*** (0.025)	0.100*** (0.025)	0.053 (0.036)	0.145*** (0.031)
<i>WordLens</i>	0.288*** (0.057)	0.299*** (0.058)	0.327*** (0.092)	0.179*** (0.068)
<i>NarrElements</i> \times <i>WordLens</i>		0.124** (0.058)	0.130 (0.086)	0.114 (0.070)
<i>Aesthetics</i>	0.962*** (0.355)	0.942*** (0.355)	1.278** (0.510)	0.054 (0.440)
<i>WarmRatio</i>	0.108 (0.089)	0.114 (0.089)	0.192 (0.128)	0.012 (0.109)
<i>Saturation</i>	-0.144 (0.115)	-0.139 (0.115)	-0.294 (0.182)	0.077 (0.136)
<i>Lightness</i>	-0.069 (0.107)	-0.065 (0.106)	0.124 (0.169)	-0.212* (0.121)
<i>Intangible</i>	-0.749*** (0.060)	-0.748*** (0.060)		
<i>Goal</i>	-0.017 (0.019)	-0.016 (0.019)	0.031 (0.029)	-0.065*** (0.022)
<i>Duration</i>	0.038 (0.065)	0.039 (0.065)	0.074 (0.106)	-0.098 (0.070)
<i>Options</i>	0.915*** (0.068)	0.914*** (0.068)	1.008*** (0.090)	0.612*** (0.097)
<i>MinPrice</i>	0.063*** (0.018)	0.064*** (0.018)	0.067*** (0.022)	-0.007 (0.024)
<i>MeanPrice</i>	-0.147***	-0.146***	-0.232***	-0.035

	(0.020)	(0.020)	(0.032)	(0.026)
<i>ImageNum</i>	0.617***	0.614***	0.820***	0.315***
	(0.025)	(0.025)	(0.036)	(0.034)
<i>Video</i>	0.103*	0.104*	-0.004	0.274***
	(0.058)	(0.057)	(0.075)	(0.074)
<i>StoryWords</i>	0.006	0.007	0.022	-0.019
	(0.028)	(0.028)	(0.036)	(0.040)
<i>Created</i>	0.300***	0.304***	0.293***	0.267
	(0.068)	(0.068)	(0.071)	(0.186)
Month Effect	Yes	Yes	Yes	Yes
Cons	-1.497**	-1.523**	-3.071***	1.184
	(0.683)	(0.683)	(0.954)	(0.867)
Observations	2,721	2,721	1,519	1,202
R ²	0.576	0.576	0.517	0.338

Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.2. Robustness Checks

To ensure the accuracy and validity of the empirical findings, this study performed several tests. The underlying mechanism of image narratives is relatively complex. Therefore, this study conducts a set of supplementary tests to explore the mechanism. First, the paper proposes that the influence of image narrativity on investor homepage visits may follow two paths. On the one hand, as described in traditional business literature, the narrative structure of images causes narrative transportation in investors, thereby changing their attitudes and behavioral intentions to reflect the story plot. For example, Van Laer et al (2014) find that narrative transportation has a direct positive impact on investors' intentions to take further action. On the other hand, the study combines the level of construal theory, suggesting that after narrative transportation occurs, it shortens the psychological distance perceived by investors, promoting their intentions to take immediate action. In other words, psychological proximity (closeness) plays a mediating role between narrative transportation and information search intention. We conduct an experiment to test the proposed mechanisms.



XGO Mini——具有AI模块的高级四足机器人
12自由度，全向，灵活。XGO是一款先进的四足机器人，可以通过语音和图像与您进行交互。

¥11,719

21%已募集

37天剩余
电子设备/科技

广东·中国

a. Non-narrative Image Design



b. Narrative Image Design

Figure 3. Examples of Experiment Design

We designed both narrative and non-narrative cover images for four authentic crowdfunding projects respectively, and translated the titles, summaries, and text information involved in the images into Chinese (taking Figure 3 as an example). Before the formal experiment, 24 participants (8×3) rate the narrativity of the images by answering the question “To what extent do you think this image depicts a story scene?” On average, narrative image designs (mean = 4.50, variance = 0.674) receive significantly higher narrativity ratings than non-narrative image designs (mean = 1.833, variance = 0.718), which demonstrates the effectiveness of narrative stimuli.

Following the literature, we measure the perceived narrative transportation of participants through the following questions (Escalas, 2004): "By browsing this information, I can easily depict a scene interacting with the product/service; this information allows me to imagine myself being in a scene interacting with the product/service; I feel fully engaged while browsing the above information." The perceived psychological distance (proximity) of participants is measured through the following questions (Rose et al., 2021): "You believe that in the near future, the product/service will become a reality; you believe there is a high likelihood that the product/service will become a reality; you believe that the product/service will have a real impact on you."

Since spatial distance in crowdfunding markets is usually influenced by factors such as the country and city of the investors, which are not changing with image design, the study mainly focuses on three other critical dimensions of psychological distance namely temporal proximity, hypothetical proximity, and social proximity (Rose et al., 2021) by asking: ‘Do you believe that in the near future, the products/services envisioned through fundraising activities will become a reality?’; ‘Do you think there is a high likelihood that the products/services conceptualized through fundraising activities will become a reality?’; ‘Do you

perceive that the realization of the products/services envisioned through fundraising activities would have an impact and significance for you (or those close to you)?’. Finally, we measure investors' intentions to visit the project homepage following the existing research (Yu et al., 2019): "I want to search for more information about this project; I am interested in learning more about this project; I want to learn more detailed information by visiting the project homepage." All the above indicators are measured using a Likert five-point scale (5 = strongly agree, 1 = strongly disagree).

A total of 200 participants were invited to participate in the experiment, all of whom had a background in business or extensive experience in participating in crowdsourcing projects. Participants were initially provided with a textual introduction to the reward-based crowdfunding model, transaction mechanism, and its features. Subsequently, they were asked questions to confirm their understanding of the concept and mechanism of reward-based crowdfunding. Then, participants were randomly assigned to one of the 8 groups (four narrative cover image designs and four non-narrative cover image designs) to browse the project information on the search page, imagining themselves considering investing in the project and completing the questionnaire. After the screening, 191 questionnaires were deemed complete and valid.

The model shows good convergent validity (Narrative Transportation: Cronbach's alpha = 0.745, CR = 0.806, AVE = 0.657; Information Search Intention: Cronbach's alpha = 0.893; CR = 0.934; AVE = 0.826) and good discriminant validity (based on Fornell-Larcker criterion and the HTMT criterion)

The study used SmartPLS3 to analyze the structural equation model, controlling for variables such as gender, age, educational background, and occupation (the results table was omitted because of the page limit). The results show that the narrative structure significantly enhances investors' narrative transportation. On the one hand, the formation of narrative transportation can significantly promote investors' information search intentions. On the other hand, it can further guide investors' behavior through the mediating mechanisms of hypothetical proximity and social proximity, with mediation paths being significant at $p < 0.05$ and $p < 0.01$ levels, respectively. It is worth noting that although narrative transportation can reduce the perceived temporal proximity for investors, it does not have a significant impact on promoting their actions. This may be due to the mechanism of reward-based crowdfunding. The overall market exhibits significant delivery lag.

Besides, given the lack of availability of the number of homepage views on the crowdfunding platform, this research employed the number of backers as the dependent variable, which represents the combined outcome of two evaluation stages. To demonstrate that the design of the project on the search page does indeed increase the potential investor base by attracting investor attention during the search phase, we conduct two analyses. First, we conduct a robustness test using the number of comments in the project discussion forum as an additional proxy variable for investor engagement behavior. The results are shown in Table 4 column 1. The increase in the number of narrative elements significantly increased the project's comment count ($\beta=0.062$, $p<0.05$), serving as additional evidence. Besides, following previous research (Liang et al., 2019), we conduct a two-stage bivariate probit model to isolate the effects of the first stage. This allows us to better understand the impact of image narrativity on the initial evaluation of the campaign. The likelihood of an investor participating in a particular project can be calculated by multiplying the probability of being initially attracted to the project on the search page by the probability of finding the project's design features satisfactory (as demonstrated in Equation 2).

$$Y_i = I(\alpha_1 + \beta_1 \text{NarrativeElements}_i + \delta S_{\text{Features}_i} + \varepsilon_1) \times I(\alpha_2 + \gamma H_{\text{Features}_i} + \varepsilon_2) \quad (2)$$

Table 4. Main Regression Results

	Comments	Two-stage Biprobit	
		Search Stage	
		Coef. (Std.Err.)	Z score
<i>NarrElements</i>	0.062** (0.030)	0.524*** (0.184)	2.84
<i>WordLens</i>	0.426*** (0.065)	0.918*** (0.246)	3.74
<i>NarrElements</i> \times <i>WordLens</i>	0.151** (0.066)	0.388* (0.235)	1.66
<i>Aesthetics</i>	1.091*** (0.412)	3.500** (1.628)	2.15
<i>WarmRatio</i>	0.015 (0.110)	0.225 (0.296)	0.76
<i>Saturation</i>	-0.242* (0.132)	-0.896** (0.431)	-2.08
<i>Lightness</i>	0.031 (0.127)	-0.091 (0.421)	-0.22
		Homepage Stage	
<i>Intangible</i>	-1.137*** (0.064)	0.812*** (0.091)	8.91
<i>Goal</i>	-0.040* (0.022)	-0.028 (0.024)	-1.15
<i>Duration</i>	0.224***	-0.008	-0.09

	(0.077)	(0.087)	
<i>Options</i>	0.633*** (0.080)	0.667*** (0.081)	8.22
<i>MinPrice</i>	0.113*** (0.023)	-0.004 (0.020)	-0.19
<i>MeanPrice</i>	-0.145*** (0.023)	-0.080*** (0.025)	-3.14
<i>ImageNum</i>	0.657*** (0.029)	0.456*** (0.034)	13.43
<i>Video</i>	0.107 (0.070)	0.119* (0.066)	1.80
<i>StoryWords</i>	-0.005 (0.030)	0.089*** (0.026)	3.44
<i>Created</i>	0.351*** (0.081)	0.172** (0.079)	2.17
Month Effect	Yes	Yes	
Observations	2,721	2,721	
R ²	0.514		

The probability of an investor participating in a project is a function of the likelihood of being attracted to the project at the search page stage and the probability of finding the project's design features satisfactory, as shown in Equation 2. The control variables S_{Features_i} presents information that investors can observe on the search page while H_{Features_i} represents the information that investors can browse on the project homepage. The unobserved factors in the first and second stages are captured by ε_1 and ε_2 , respectively. As the Probit model is only suitable for binary dependent variables, the study follows the approach of Liang et al. (2019) and processes the dependent variable as to whether the project has achieved relatively leading (top 50%) investor participation. Using the biprobit command in STATA and setting the partial parameter to handle the partially observable nature of the dependent variable, the study employs the maximum likelihood method to estimate the variable coefficients. Table 4 (column 2 and 3) demonstrates that, under the estimation of the two-stage model, the cover image narrativity still has a significant positive impact on the dependent variable ($\beta=0.524$, $p<0.01$), thus providing further evidence for the impact of the search page.

To address potential systematic biases in communication strategies used by founders employing narrative image design, we conducted a Propensity Score Matching (PSM) procedure. This was done to determine if this strategy led to higher campaign funding amounts. Such biases might arise if project initiators using narrative strategies in their cover images differ systematically from those not using these strategies in other design aspects, potentially compromising the empirical analysis's validity.

For the propensity score matching test, we considered various project homepage design features, including financing goals, duration, reward options, minimum reward price, average price, presentation features (like video, image, and story words), and investor experience. The aim was to match projects based on whether their cover image design incorporated narrative elements, using a caliper value of 0.05, and to ensure the reliability of our findings.

Table 5. Regression Results on Matched Dataset

	Model 1	Model 2 <i>Tangible</i>	Model 3 <i>Intangible</i>
<i>NarrElements</i>	0.0802*** (0.029)	0.0195 (0.041)	0.154*** (0.036)
<i>WordLens</i>	0.245*** (0.079)	0.269** (0.120)	0.084 (0.098)
<i>NarrElements</i> × <i>WordLens</i>	0.125* (0.069)	0.145 (0.102)	0.137* (0.081)
<i>Aesthetics</i>	0.870* (0.465)	1.253** (0.621)	-0.518 (0.617)
<i>WarmRatio</i>	0.140 (0.117)	0.179 (0.155)	0.032 (0.155)
<i>Saturation</i>	-0.309* (0.165)	-0.317 (0.223)	-0.210 (0.218)
<i>Lightness</i>	-0.091 (0.150)	-0.056 (0.219)	-0.053 (0.184)
<i>Intangible</i>	-0.727*** (0.078)		
<i>Goal</i>	0.008 (0.026)	0.067* (0.036)	-0.078** (0.031)
<i>Duration</i>	0.042 (0.091)	0.085 (0.134)	-0.155 (0.111)
<i>Options</i>	0.928*** (0.083)	1.037*** (0.107)	0.600*** (0.132)
<i>MinPrice</i>	0.074*** (0.022)	0.072*** (0.026)	0.002 (0.034)
<i>MeanPrice</i>	-0.181*** (0.026)	-0.262*** (0.039)	-0.053 (0.036)
<i>ImageNum</i>	0.702*** (0.033)	0.885*** (0.044)	0.373*** (0.047)
<i>Video</i>	0.063 (0.071)	-0.074 (0.087)	0.372*** (0.108)
<i>StoryWords</i>	0.001 (0.036)	-0.009 (0.045)	0.013 (0.052)
<i>Created</i>	0.367*** (0.088)	0.357*** (0.090)	0.375 (0.270)
Month Effect	Yes	Yes	Yes
Observations	1,811	1,134	677
R ²	0.565	0.489	0.385

After conducting the propensity score matching test, the study re-analyzed the model on the matched samples. Table 5 shows the results of the empirical

test. The coefficients of *NarrElements* in the tangible (0.0195) and intangible group (0.154***) are significantly different (difference = -0.085**), which is consistent with our main analysis. The regression results indicate a high level of consistency with the main regression, which confirms the positive effect of the cover image narrativity strategy and the significant difference in the strategy between tangible and intangible projects.

Furthermore, since the dependent variable is a count variable, we conducted a negative binomial regression for a robustness check, and the results remained consistent (significant impacts of *NarrElements* for intangible projects ($\beta=0.145***$) and insignificant impacts for tangible projects ($\beta=0.038$). We additionally use clustered robust standard errors to capture unobserved effects that may be introduced by fundraisers' traits, and the results remain robust.

5. Conclusions and Implications

This paper investigates the impact of visual design on the performance of crowdfunding campaigns on the search list page. This study sheds light on how to attract the attention of potential backers and stimulate their interest in clicking on campaign pages. Drawing on narrative transportation theory, the study analyzes data from 2,721 reward-based crowdfunding campaigns. It demonstrates that the use of image narrativity is a highly effective communication strategy, particularly for intangible campaigns. Moreover, this research contributes to the existing literature on crowdfunding by introducing the concept of image narrativity and exploring its influence on backers' perception, while also examining the moderating effects of project type and the amount of textual information. The findings provide practical recommendations for both project founders and crowdfunding platform designers.

First and foremost, the research findings imply that project initiators should prioritize the design of the search page. Given the ongoing growth of the crowdfunding market, an increasing number of online investors have become regular visitors to funding platforms. Therefore, capturing investors' attention through effective information cue design on the search page is a crucial prerequisite for a project to be noticed and potentially receive investment consideration. Project initiators are encouraged to invest effort in optimizing their search page presence to enhance visibility and attract potential backers.

Second, project initiators can captivate the attention of investor groups through the use of

narrative image design. By incorporating narrative elements such as plot, setting, identifiable objects, and emotions, narrative image design immerses investors who come across the image into the story it portrays. This fosters empathy and psychological representation, enhancing investors' comprehension of the project's value.

Third, this article offers guidance for financing strategies for intangible projects, suggesting that project initiators can construct narrative-driven or conceptual scenarios to mitigate the intangibility of their projects.

Fourth, the effective matching between investors and fundraising projects plays a crucial role in the platform's vitality and long-term growth. Platform operators can provide investors with effective design suggestions or explore the incorporation of richer functionality designs to increase the probability of investors finding satisfying candidate projects during the search phase.

6. References

- Böckel, A., Hörisch, J., & Tenner, I. (2021). A systematic literature review of crowdfunding and sustainability: highlighting what really matters. *Management Review Quarterly*, 71(2), 433-453.
- Escalas, J.E., (2004). Imagine yourself in the product: Mental simulation, narrative transportation, and persuasion. *Journal of advertising*, 33(2), pp.37-48.
- Fiedler, K. (2007). Construal level theory as an integrative framework for behavioral decision-making research and consumer psychology. *Journal of Consumer Psychology*, 17(2): 101-106
- Fisher, R. A. (1992). *Statistical methods for research workers*. In Breakthroughs in statistics (pp. 66-70). Springer, New York, NY.
- Freedberg, D., & Gallese, V. (2007). Motion, emotion and empathy in esthetic experience. *Trends in Cognitive Sciences*, 11(5), 197-203.
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79(5), 701-721.
- Kim, M., & Lennon, S. (2008). The effects of visual and verbal information on attitudes and purchase intentions in internet shopping. *Psychology & Marketing*, 25(2), 146-178.
- Larsen, V., Luna, D., & Peracchio, L. A. (2004). Points of View and Pieces of Time: A Taxonomy of Image Attributes. *The Journal of Consumer Research*, 31(1), 102-111.
- Lee, N. Y., Noble, S. M., & Zablah, A. R. (2020). So distant, yet useful: The impact of distal stories on customers' service expectations. *Journal of Business Research*, 113, 230-242.
- Liang, C., Shi, Z., & Raghu, T. (2019) "The spillover of spotlight: Platform recommendation in the mobile app market," *Information Systems Research*, 30(4), pp. 1296-1318.
- Lim, H., & Childs, M. (2020). Visual storytelling on Instagram: branded photo narrative and the role of telepresence. *Journal of Research in Interactive Marketing*, 14(1), 33-50.
- Liu, X., Fang Y., Ye, Q. (2022). Product sampling on reward-based crowdfunding platforms. *Information & Management*, 59(8), 103718.
- Mollick, E. (2014) The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1-16.
- Rose, S., Wentzel, D., Hopp, C., & Kaminski, J. (2021). Launching for success: The effects of psychological distance and mental simulation on funding decisions and crowdfunding performance. *Journal of Business Venturing*, 36(6), 106021.
- Slater, M. D. (2002). *Entertainment education and the persuasive impact of narratives*. In *Narrative impact: Social and cognitive foundations* (pp. 157-181). Lawrence Erlbaum Associates Publishers.
- Thompson, C. J. (1997). Interpreting consumers: A hermeneutical framework for deriving marketing insights from the texts of consumers' consumption stories. *Journal of Marketing Research*, 34(4), 438-455.
- Van Laer, T., De Ruyter, K., Visconti, L. M., & Wetzels, M. (2014). The extended transportation-imagery model: A meta-analysis of the antecedents and consequences of consumers' narrative transportation. *Journal of Consumer Research*, 40(5), 797-817.
- Van Laer, T., Edson Escalas, J., Ludwig, S., & Van Den Henda, E. A. (2019). What happens in Vegas stays on TripAdvisor? A theory and technique to understand narrativity in consumer reviews. *Journal of Consumer Research*, 46(2), 267-285.
- Xia, H., Pan, X., Zhou, Y. & Zhang, Z. J. (2020) "Creating the best first impression: Designing online product photos to increase sales," *Decision Support Systems*, (131), pp. 113235.
- Yu, M., Liu, F., Lee, JA. (2019). Consumers' responses to negative publicity: The influence of culture on information search and negative word-of-mouth. *Journal of Brand Management*. 26:141-56.