Eindhoven University of Technology

BACHELOR

A Study on Social Support in Crowdfunding

The Herding and Distinctiveness Effects

Radeva, Sveta R.

Award date:
2023

Link to publication

TU/e

A Study on Social Support in Crowdfunding: The Herding and Distinctiveness Effects

Bachelor End Project

Full Name	Student ID
Sveta Radeva	1549340

Supervisor : Plato Leung

Eindhoven, June 28, 2023

Abstract

This study explores the dynamics of decision-making in reward-based crowdfunding, focusing on the impact of perceived social support. Thus, investigating two hypotheses: the Distinctiveness Hypothesis, suggesting that projects with fewer previous backers receive increased support when new backers identify with the project, and the Herding Hypothesis, positing that projects with more previous backers garner increased support. Using a custom experiment, data was collected on backers' personal interests, the level of previous backing for the projects they support, and the amount they pledge. Our statistical analyses, including regression analysis and the Kruskal-Wallis H test, provide substantial support for the Herding Hypothesis, but not for the Distinctiveness Hypothesis.

Contents

1 │ Introduction

Crowdfunding is a term used to describe the practice of raising contributions from a large number of people, typically through the internet, to fund a project or venture [Song et al., 2022]. The project and ventures can be of social, cultural, or for-profit nature. Crowdfunding has its origins in a long tradition of community-based funding, in which people pooled their resources to support common goals or initiatives [Althoff and Leskovec, 2015]. In 2009, Kickstarter launched and crowdfunding began gaining its popularity and emerging in the world as a major funding source . In 2012, the first business crowdfunding platform, Fundable, was founded by entrepreneurs Wil Schroter and Eric Corl [Song et al., 2022]. The platform allowed entrepreneurs to connect with potential investors and raise capital for their projects without having to rely on traditional sources like banks or venture capitalists [Althoff and Leskovec, 2015]. By outsourcing the fundraising process to the general public, or the so-called "crowd," crowdfunding has opened up new opportunities for innovation and entrepreneurship. It enables individuals and small businesses to access funding and financial support that may otherwise be out of reach. Unlike traditional fundraising methods, crowdfunding lowers the barriers of entry and simultaneously, provides higher financing [Henrich et al., 2014]. Today, as a result of the rising use of technology, crowdfunding has grown into a global practice, with numerous platforms and strategies for raising funds within a range of industries and applications[Althoff and Leskovec, 2015]. The increasing amount of platforms has further accelerated the popularity of crowdfunding sites for financing ventures and projects. This virtual market of startups, ideas, and innovations has grown into a massively utilized tool for smaller scale entrepreneurs to realize ideas and also a research platform for scientists to investigate behavioral patterns in humans in the sphere of entrepreneurship.

Lambert and Schwienbacher (2010) extend the definition of crowdfunding by stating that the provided financial resources are either "in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes". This introduces the first few forms of crowdfunding: donation, reward-based, and equity, respectively. For the scope of this project, this paper will focus on reward-based crowdfunding. In reward-based crowdfunding, founders offer non-monetary rewards in exchange for the funding from backers. These rewards are in the forms of products and services, usually offered at a later stage, while the funds do not have to be repaid. Reward-based has become a popular option for entrepreneurs as it allows them to build a customer base along with raising funds, and funds do not have to be repaid, though companies are obliged to deliver on their respective rewards. As a result, reward-based platforms are becoming increasingly popular in both practice and in research, yet our understanding of social behavior in this field is largely understudied. Delving deeper into the social behavior variable is essential to have an adequate understanding of crowdfunding and its implications for entrepreneurs, backers, and the broader community. Examining the dynamics of interactions between project creators and backers, the motivations behind individuals' participation, the role of social networks, and the impact of social influence can provide valuable insights into the success or failure of crowdfunding campaigns. Additionally, exploring the effects of social behavior on the overall ecosystem of crowdfunding can shed light on the emergence of trends, the formation of communities, and the evolution of platforms. By understanding the intricacies of social behavior in reward-based crowdfunding, researchers and practitioners can develop strategies to optimize campaign outcomes, enhance backer engagement, and foster sustainable growth in this ever-evolving funding landscape.

Majority of existing literature studies examine specific unchanging factors of campaign platforms and their impact on the audience. These factors stay constant throughout the project's lifetime on the platform, or are rarely updated. Little to no research has delegated time to examine the impact of volatile variables. These variables may include: percent of goal reached, number of backers, and days left until deadline to fundraise. The volatility of these variables makes them liable for constant change. Fundamentally, there is a lack of complete understanding of social behavior and decision-making throughout the entirety of the fundraising process. This study intends to investigate the impact of social influence on individuals' behavior, when it comes to raising money for a reward-based project.

Varying psychological theories about human decision-making, particularly in the presence of a crowd, predict different outcomes of human behavior in reaction to social influence [Leonardelli et al., 2010]. The aim of this paper is to investigate the relationship between perceived public support of campaigns and the success of respective campaigns. Through this analysis, the aim is to understand how the perceived actions of previous backers impact the behavior of the current funders as well as the social influence that

perceived public support has on new investors. This research encompasses to answer the following research question:

To what extent does perceived social support impact decision-making of new funders in reward-based crowdfunding? How?

The answering of this question will be investigated through a survey. This survey will simulate a reward-based crowdfunding website and requests survey takers to respond whether they would back a certain project or refrain from doing so. The survey takers will also have the option of choosing how much they would back a certain project. The perceived social support will be represented by the number of past backers, and the respective money raised displayed alongside each project. This will allow for the possibility to explore the impact of social influence through the interpretation of past backers' actions. The actions in question refer to the decisions made by previous backers in whether they chose to support a particular campaign or not. Decision-making will be studied by looking at the amount of money that "future" backers are willing to pledge for varying projects. The impact of these variables will be studied by simulating different stages of the fundraising cycle. It is crucial to study how the money raised at each stage changes as it can also signify the decision-making of new funders in response to those values.

For an effective exploration of the aforementioned research question, the data will be studied through the lens of Distinctiveness theory and the Herding effect. Distinctiveness theory suggests that projects with fewer previous backers will receive increased support when new backers feel they identify with the project due to the simultaneous desire for uniqueness and inclusion [Leonardelli et al., 2010]. This means that new funders are more likely to back a project if they feel a personal connection to it, rather than just following the crowd. On the other hand, the Herding Effect suggests that new funders are more likely to back projects with a larger number of previous backers, as they perceive the crowd of supporters as sufficient evidence of quality [Beier and Wagner, 2016]. Therefore, this psychological phenomena could help to explain why some crowdfunding campaigns may attract a lot of support despite not being particularly unique or innovative. Through the investigation of both theories, a better understanding could be obtained on how perceived public support influences the decision-making of new funders in reward-based crowdfunding, and the role that social influence plays in this process.

1.1 | Hypotheses:

1. *Distinctiveness Hypothesis: Projects with fewer previous backers will receive increased support when new backers feel they identify with the project.*
   This comes from the simultaneous desire for uniqueness and inclusion, called the Distinctiveness Theory [Leonardelli et al., 2010]. This is more likely to occur when a project has not been discovered and backed by many. As a result it may create a feeling of uniqueness and sense of distinctiveness among the crowd.

2. *Herding Hypothesis: Projects with a larger number of previous backers will receive increased support from new backers.*
   New funders are more likely to back crowdfunding campaigns that have a large number of past backers, as this provides social proof of the project's viability and attractiveness. This is called the Herding Effect and it suggests that people tend to follow the actions of others, as opposed to making independent judgements. It is likely they would perceive the crowd of supporters as sufficient evidence of quality.

2 | Literature Review

The internet has revolutionized everything humankind has known to exist; communication, creation, involvement and more prevalent than anything else, the business sector. Concepts which have been prevalent for a long time have been revolutionized as a result of technology. Through these technological advancements the individual ends up holding a lot more weight within any given structure. For example, one person who is at the end of the consumption chain can become much more integrated in the decision-making process of a company or for a project. One of the concepts which has been revolutionized as a result of technology is crowdfunding.

Crowdfunding has become an increasingly prevalent method for raising funds, completely transforming the way individuals and businesses can assure financial support for their projects. A multitude of studies have been conducted and dedicated to examining the specific factors that influence the success or failure of crowdfunding campaigns. However, there is an ever prevalent gap in the literature when it comes to understanding the dynamic nature of crowdfunding platforms and the evolving decision-making processes throughout the fundraising journey. This study aims to bridge this gap by investigating the impact of perceived public support on the decision-making of new funders in reward-based crowdfunding.

To understand the context of this study, it is vital to explore the existing literature on crowdfunding. Previous research has primarily focused on factors such as project quality [Song et al., 2022], campaign duration [Song et al., 2022], funding goals [Hong and Ryu, 2019], and the use of persuasive strategies in campaign presentations . These studies have provided valuable insights into the determinants of crowdfunding projects' success. However, they have often overlooked the dynamic aspects of crowdfunding campaigns and the influence of changing variables on backers' decision-making processes, which is the essential link to social behavior.

To further strengthen this study, in addition to exploring the existing literature on crowdfunding, this study also draws upon psychological theories which are related to social influence. Social influence is a key factor in the shaping of individuals' behaviors and their decision-making processes. The theories that will be explored as previously mentioned are the Distinctiveness Theory and the Herding Effect. These theories provide a valuable framework for conceptualizing the impact of perceived public support on the decision-making of new funders in reward-based crowdfunding. To have an adequate understanding of the two theories and their effect within this study it is critical to understand what these theories suggest and their relationship with this study.

The Distinctiveness Theory is developed in the field of psychology and deals with the understanding that human beings inherently have a necessity for individuality and uniqueness as well as an inherent need to belong within a group. The Distinctiveness Theory aims to understand at which times uniqueness outweighs the need to be within a membership and contrary when the need for a membership to a group outweighs the yearning for uniqueness [Leonardelli et al., 2010]. It is key to mention that an individual undoubtedly will have their own interests which might not always be the same as the rest of the community, these interests become a categorical part of their uniqueness.

Within the context of this study an identifier of individuality could also be considered the choice to invest in a project less people have invested in to fulfill the desire for uniqueness. In addition when it comes down to actually making the choice of which project to invest in, the role of the personal connection is vital. The decision making process would be built around the need to conform and equally the need to stand out. When making such a decision an individual is influenced by their personal interests, which makes them more likely to invest in something that would benefit them. The Distinctiveness theory provides an outlook on an individual's desire to fit into the majority in opposition with the desire to stand out.

Alternatively the Herding Effect suggests a different angle. Herding is defined as the choice an individual decides to make to imitate the behavior that is seen from a group as opposed to making an independent decision which is based on their own understanding and knowledge [Baddeley, 2010]. A multitude of studies have been conducted on the tracing and understanding of herd behavior, especially within the stock market and within the tracking of cryptocoins [Rahayu et al., 2021]. One of the statements that is associated with herd behavior is associated with an inherent greed that individuals possess. They incline more towards pursuing the investments of others in order to not fall behind and not follow their own

rationale from their own personal knowledge[Althoff and Leskovec, 2015].

In the context of this study, the Herding Effect could be observed when individuals choose to invest in a project that has already received substantial support from others. This behavior could be driven by a perceived validation of the project's viability and attractiveness, as well as an inherent desire not to fall behind in potential investment opportunities. The Herding Effect provides a perspective on an individual's tendency to conform to the majority, often at the expense of their unique interests or judgments.

The Distinctiveness Theory suggests that projects with fewer previous backers may receive increased support when new funders feel a personal connection to the project. This desire for uniqueness and inclusion can motivate individuals to back a project that has not been discovered and supported by many others. On the other hand, the Herding Effect suggests that new funders are more likely to back projects with a larger number of previous backers. They perceive the crowd of supporters as evidence of the project's quality and viability, leading to a tendency to follow the actions of others rather than making independent judgments.

While these theories provide insights into social influence and decision-making, their application in the context of reward-based crowdfunding is still underexplored. By investigating these theories within the specific context of reward-based crowdfunding, this study aims to enhance our understanding of how perceived public support influences the decision-making of new funders.

3 | Data & Methodology

In order to investigate the aforementioned hypotheses, an original experiment was conducted to be able to adequately investigate the dynamics of crowdfunding within the entrepreneurial context. The experiment simulated a reward-based crowdfunding platform, providing participants with realistic projects, project descriptions, and homepages. By leveraging the capabilities of the survey platform Qualtrics, participants were presented with a series of 12 unique projects and allocated a virtual wallet of $1000 to pledge their support. Survey-takers had the opportunity to support each project by pledging money, in exchange for rewards, predetermined by the founders of respective projects.

The process of conducting this online experiment was composed of two primary steps. Firstly, carrying out the experiment and consequently, analyzing the data. In preparation for the survey, authentic projects from a crowdfunding platform needed to be selected. These projects were filtered to specific criteria in order to sufficiently control features of these campaigns and create a uniformity among the projects. This was done to ensure the validity of the findings, by eliminating potential confounding variables that may be a result of the diversity of the projects.

3.1 | Data Collection for Survey

For the purpose of this online experiment, Kickstarter, a widely recognized reward-based crowdfunding platform, served as the primary source of data. Kickstarter enables individuals, businesses, and creative projects to raise funds from a large number of people, predominantly through online channels. The platform operates on an all-or-nothing funding model, where projects must meet their funding goals within a specified timeframe to secure the pledged funds. Kickstarter was established in 2009 and initially renowned for its emphasis on creative ventures such as film, music, art, and technology. Today, the platform has expanded its scope to encompass a broad spectrum of categories, including games, publishing, and food. This diversification has attracted a diverse range of project creators and funders, contributing to the platform's vibrant and dynamic ecosystem. Over the years, Kickstarter has become a popular choice for both established creators and aspiring entrepreneurs to realize their visions and connect with a global audience.
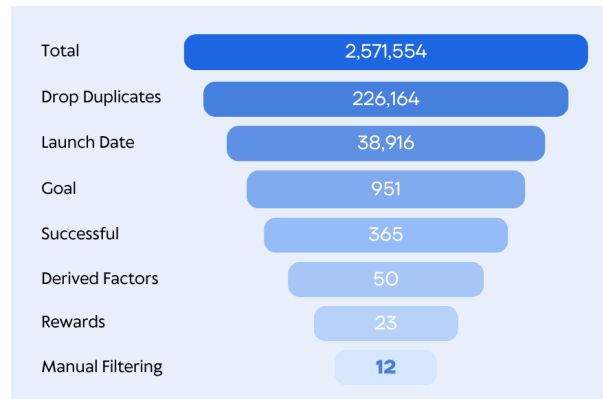
Data collection involved accessing a pre-scraped dataset of Kickstarter projects, which was updated monthly. This longitudinal dataset provided a comprehensive snapshot of crowdfunding campaigns on the platform over the years. By harnessing the diverse pool of projects available on Kickstarter, it was possible to filter through and curate a selection of campaigns that were coherent in their criteria. This selection process ensured that the projects included in the study were not only representative of the broad spectrum of categories found on Kickstarter, but also met specific parameters that aligned with the research objectives.

3.2 | Identifying Relevant Projects

The initial dataset, with over 2.5 million entries, was a rich source of information, but it was essential to narrow it down to a manageable and relevant subset. Moving from the broad dataset to a more focused selection, meant applying a series of filters to identify the most relevant projects for this study. These criteria were carefully selected to align with the research objectives and to ensure that the projects included in the study were representative of the current landscape of Kickstarter campaigns.

- Launch date: Startups with a launch date after January 1, 2020, were considered to include recent crowdfunding campaigns that align with the current dynamics of the platform.

- Funding goals: Projects with funding goals falling within the range of $80,000 to $120,000 were included. This focus on projects of similar scales aimed to reduce potential bias introduced by extreme values perceived by the survey-takers.

- Successful campaigns: Only startups marked as 'successful' were retained for further analysis. This ensured that the selected startup sample represents quality projects that have achieved their funding goals and are more likely to attract new backers.

- Derived features: Relevant features such as average pledge per backers, converted pledged amounts, and time since launch were carefully chosen or created. The outliers were stripped from these features

- Rewards scheme: The survey's reward scheme consisted of three possible selections for each project, fixed at the values of $100, $200, and $500. The majority of projects in the resulting sample had rewards close to or at these benchmark values, maintaining uniformity in the selected sample projects.

Total	2,571,554
Drop Duplicates	226,164
Launch Date	38,916
Goal	951
Successful	365
Derived Factors	50
Rewards	23
Manual Filtering	12

Figure 3.1: Project Filtering

By applying these data preprocessing steps, a carefully curated and representative startup sample was derived. The remaining sample consisted of 50 startups, which were all successful, relatively novel, and within a similar financial goal. In order to refine this sample into the select projects that will be used, the author manually filtered through the remaining dataset. In this process, projects were identified to be in diverse categories, fitting to the survey's reward scheme, and non-repetitive. The final 12 projects can be seen below.

Table 3.1: Project List

| Project	Category
How to Ruin the Holidays	Movies
Breez 2-in-1 Smart Bedroom Fan	Technology
Plunderlong and Plunderstrong	Gaming
ONA - The Ultimate Culinary Knife	Cooking
Hapi VPN - Lifetime VPN	Technology
Nightlight Daily 2022	Reading
Dracula the Evidence Hardcover Edition	Reading
Apple-Man	Movies
Fractured Veil - A Survival and Base Building Multiplayer	Gaming
Pivo Pod X Your pocket sized cameraman	Social Media
UP TO YOU ANTHOLOGY - Design Bags	Fashion
Arris Adventure Travel Pack	Travel

3.3 | Experimental Design

This study aims to examine the relationship between the social support a project has received and the amount of money pledged to it. In this context, social support is quantified by the number of backers a project has, which in turn directly correlates to the amount of money pledged. Therefore, a higher number of backers not only indicates greater social support, but also translates into a higher amount of funds being pledged to the project. For the scope and structure of this experiment, social support is categorized into 5 distinct levels, each corresponding to percentages of campaign goal reached. In order to control the campaign goals, all project goals were fixed at $100,000. This was necessary to facilitate the survey as intended.

Table 3.2: Levels of Social Support

	Level 1	Level 2	Level 3	Level 4	Level 5
Percent of goal reached	<5%	25%	50%	75%	>98%
Value in Dollars	<$5,000	$25,000	$50,000	$75,000	>$98,000
Backer Count	35	175	350	525	686

Projects were selected to have a variety of different categories, as to randomize the possible selections, but also to allow for an exploratory analysis of the Distinctiveness Hypothesis. Prior to starting the experiment, the survey-takers were inquired about their interests/hobbies, allowing for the isolation of the responses from individuals whose interests align with certain project categories to those whose interests do not. If the Distinctiveness Hypothesis holds, it is expected the individuals with aligned interests to pledge more to projects with fewer backers.

To test both the Distinctiveness and Herding Hypothesis, a within-subjects design was used for this experiment. Each survey-taker went through all 12 projects in the survey. For each project, they receive a randomly allocated "level" of social support. This within-subjects design means each participant serves as their own control, and the effects of the independent variable are assessed within the same individual across different conditions. This design is advantageous because it controls for individual differences. Since each participant is exposed to all conditions, any differences in responses can be more confidently attributed to the manipulation of the independent variable (level of previous backers), rather than individual differences among participants. This survey was set up in this manner to allow for an investigation of both hypotheses simultaneously.
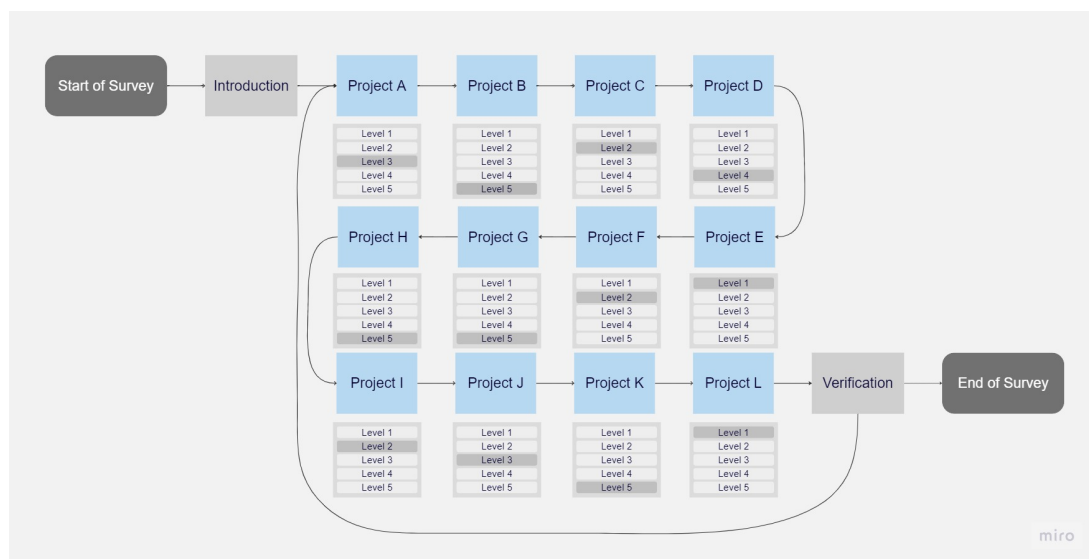
Figure 3.2: Survey Flow

3.4 | Survey Features

As seen in Figure 3.2, the survey begins with introductory questions. These questions inform participants about the purpose of the study and provide the necessary instructions to complete the survey. Survey-takers are assured of the anonymity and confidentiality of their responses. This is proceeded a series of questions about their age, gender, occupation, and interests. This data allows for an analysis of the demographic, as well as the exploration of potential relationships between respondents and specific project categories, enabling the testing of the Distinctiveness Theory hypothesis.

To create a realistic crowdfunding scenario, participants are provided with a virtual "wallet" containing a total of $1000. This amount was deliberately chosen to incentivize respondents to make pledges while imposing a realistic cap on their spending, mirroring real-life situations involving personal funds. Participants can freely allocate funds from their wallet, ensuring not to exceed the total amount of $1000. The

remaining balance is consistently displayed throughout the survey, allowing participants to track their expenditures.

In terms of rewards, participants have the opportunity to support each startup by choosing to pledge $100, $200, or $500 from their own virtual funds. These pledges entitle participants to rewards predetermined by the project's funders. Alternatively, participants also have the option not to pledge any amount at all.

3.5 | Variables

3.5.1 | Independent Variable

The independent variable in this study is the number of backers for each project. The number of backers serves as an indicator of perceived social support, as it reflects the level of interest and existing support base for each campaign. This variable was manipulated to create scenarios with varying levels of social support, as seen in 3.1.

In order to determine what a reasonable and realistic amount of backers to have at the end of a $100,000 campaign goal, the median number of backers of the sample was used as an approximation. With a mean of 728 backers, the levels of social support was rounded and capped at 700 backers.

3.5.2 | Dependent Variables

The dependent variable in this study is the funding allocation made by participants. It represents their decision-making in terms of whether or not they are willing to pledge to a project and the amount they would be pledging. This variable will be measured as the amount of virtual funds allocated to each project in the survey.

The funding allocation provides insights into participants' willingness to support a project financially and reflects their perceived value and interest in the rewards offered. By examining the funding allocation across different scenarios of perceived public support, it is possible to understand the extent to which perceived support influences participants' decision-making and funding behavior.

3.5.3 | Control Variables

The following descriptions are provided to give a better look into the controlled variables of this experiment.

- Project selection criteria: The projects included in the study were carefully selected based on specific criteria to ensure a representative sample. These criteria encompassed launch date, funding goals, successful campaigns, derived features, and rewards scheme.

- Project categories: A diverse range of project categories was considered, allowing for an exploration of the influence of the Distinctiveness Theory hypothesis on participants' decision-making and crowdfunding dynamics across different domains.

- Project goal: The funding goals for all selected projects were fixed at $100,000, which is a median and mean value within the sample. This eliminates the potential confounding effect of varying goal amounts and focuses the analysis on campaigns of similar scales.

- Virtual wallet amount: Participants are provided with a fixed virtual wallet containing a total of $1000. This deliberate choice incentivizes realistic funding behavior while maintaining a cap on spending, simulating real-life scenarios involving personal funds.

- Pledge amounts: Participants are given the option to allocate funds from their virtual wallet in fixed pledge amounts of $100, $200, or $500. This consistency in options for supporting each project facilitates the examination of funding allocation preferences.

These control variables contribute to more accurate interpretations of the findings and enable regression analysis to assess the individual contributions of the independent and control variables to the dependent variable. By considering these variables, this study aims to gain a comprehensive understanding of the factors influencing decision-making in crowdfunding contexts.

3.6 | Model Selection

To investigate the proposed hypotheses, namely the Distinctiveness Hypothesis and the Herding Hypothesis, a comprehensive statistical analysis was conducted. This analysis encompassed both descriptive and inferential statistical methodologies, with a particular emphasis on regression analysis.

Given the nature of the data, the assumption of normality inherent to regression models was violated in the dataset. To address this, a rank transformation was employed on the 'Level' variable, a non-parametric method that replaces data by their ranks. As such, the regression analysis makes it possible to model and investigate the relationships between variables, and by using the rank-transformed variables, it was possible to mitigate the effects of outliers and non-normality. The statistical significance of the relationships under investigation was assessed through the regression coefficients and their associated p-values. A p-value threshold of less than 0.05 was adopted as indicative of a statistically significant relationship.

The Distinctiveness Hypothesis posits that crowdfunding projects with a lower quantity of previous backers will garner increased financial support when potential backers perceive a personal connection or alignment with the project. To empirically test this hypothesis, an 'interest_alignment' binary variable was constructed. This variable indicates whether a respondent's personal interests, as indicated in the 'interests/hobbies' column, align with the project category. The model is a multiple linear regression that uses the money pledged as the dependent variable and 'interest_alignment' and 'Level_rank' as independent variables. The interaction term between 'interest_alignment' and 'Level_rank' is also included in the model. This model allows to examine whether the relationship between the level of interest alignment and the number of previous backers significantly affects the pledged amount.

Conversely, the Herding Hypothesis suggests that crowdfunding projects with a larger number of previous backers will attract increased financial support from potential backers. To empirically test this hypothesis, a simple linear regression model is estimated with 'Pledged' as the dependent variable and 'Level_rank' as the independent variable. This model allows to examine whether the number of previous backers significantly affects the pledged amount.

The statistical methods employed in this study - rank transformation, regression analysis, and Kruskal-Wallis H - were chosen based on the nature of the data and the specific hypotheses under investigation. These methods allowed for the robust testing of the hypotheses while addressing the statistical challenges posed by the data.

4 | Results

4.1 | Demographic

The demographic profile of the respondents in our dataset provides valuable insights into the diverse backgrounds of the individuals. The dataset includes information about the respondents' age, gender, occupation, and interests.

The age distribution of the respondents is skewed towards the young adult and middle-aged demographic, with about 83% of respondents falling within the ages of 18-44. The respondents come from a wide range of occupations, reflecting the diversity of the dataset. The most common occupations among the respondents are students and full-time employees. This is coherent with the age ranges of the respondents.
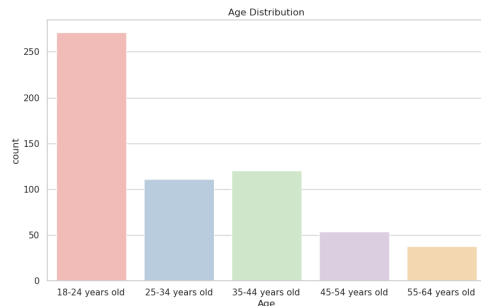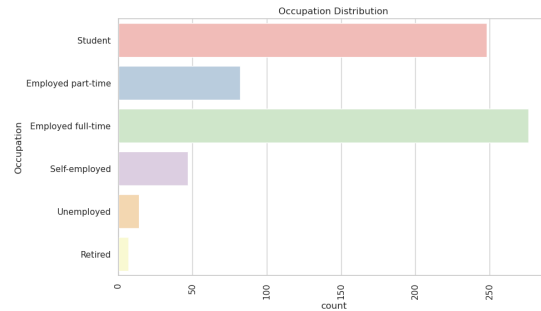
(a) Age Graph   **(b)** Occupation Graph

The gender distribution in the dataset is fairly unbalanced, with males representing 65.3% of the respondents and females representing 34.7%. Lastly, respondents were limited to selecting a multitude of the fixed interests. The most common interests among respondents include Sports, Travel, Music, and Technology, while the least common include Yoga, Volunteer Work, and Writing.
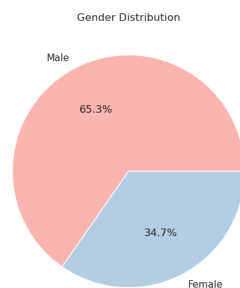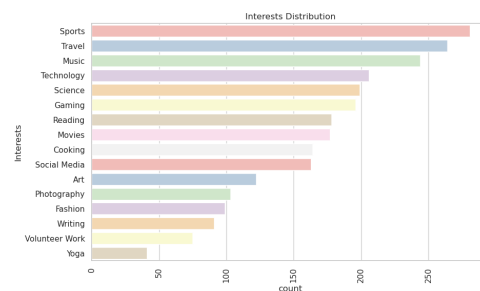
(a) Gender Graph   **(b)** Interests Graph

4.2 | Hypothesis 1: Distinctiveness Hypothesis

Table 4.1: Distinctiveness Hypothesis Regression

Variable	Coefficient	Standard Error	Test Statistic	p-value
Intercept	59.3029	10.040	5.906	0.000
Level_rank	0.1696	0.029	5.765	0.000

The Distinctiveness Hypothesis postulates that crowdfunding projects with a smaller number of previous backers are likely to receive increased financial support when new backers perceive a high degree of identification with the project. This hypothesis is grounded in the Distinctiveness Theory, which suggests

a simultaneous desire for uniqueness and inclusion among individuals.

To empirically test this hypothesis, a regression analysis was conducted with the pledged amount as the dependent variable and the rank-transformed interest alignment as the independent variable. The regression coefficient for the interest alignment rank was estimated to be 0.0727, indicating that a unit increase in the interest alignment rank is associated with a 0.0727 unit increase in the pledged amount, ceteris paribus. However, the p-value associated with the interest alignment rank was calculated to be 0.053, marginally exceeding the conventional significance level of 0.05. Consequently, we fail to reject the null hypothesis at the 5% significance level, suggesting that the relationship between interest alignment rank and pledged amount is not statistically significant at this level.

Based on these empirical findings, there is insufficient evidence to substantiate the Distinctiveness Hypothesis within the context of this study.

4.3 | Hypothesis 2: Herding Hypothesis

Table 4.2: Herding Hypothesis Regression

Variable	Coefficient	Standard Error	Test Statistic	p-value
Intercept	59.3029	10.040	5.906	0.000
Level_rank	0.1696	0.029	5.765	0.000

The Herding Hypothesis posits that crowdfunding projects with a larger number of previous backers will garner increased support from new backers. This hypothesis is rooted in the concept of social proof, where individuals tend to conform to the actions of others under the assumption that those actions reflect correct behavior.

To empirically test this hypothesis, a regression analysis was conducted with the pledged amount as the dependent variable and the rank-transformed level as the independent variable. The regression coefficient for the level rank was estimated to be 0.1696, indicating that a unit increase in the level rank is associated with a 0.1696 unit increase in the pledged amount, ceteris paribus. The p-value associated with the level rank was calculated to be less than 0.001, significantly below the conventional significance level of 0.05. Consequently, the null hypothesis is rejected at the 5% significance level, suggesting that the relationship between level rank and pledged amount is statistically significant at this level.

Based on these empirical findings, there is substantial evidence to support the Herding Hypothesis within the context of this study.

4.4 | Kruskal-Wallis H Test

Table 4.3: Kruskal-Wallis H Test

Variables	Test Statistic	p-value
All four groups	41.540	0.000
'Few' backers with alignment vs. 'Few' backers without alignment	2.779	0.096
'Many' backers with alignment vs. 'Many' backers without alignment	3.153	0.076
'Few' backers with alignment vs. 'Many' backers with alignment	11.252	0.001
'Few' backers without alignment vs. 'Many' backers without alignment	26.861	0.000

Following the initial exploration of the data and the application of the regression analyses, it became clear that further investigation was needed to fully understand the relationships under study. Given the non-normal distribution of our variables, the decision was made to employ the Kruskal-Wallis H test, a non-parametric method that does not assume a specific distribution of the data. This test is particularly useful for comparing more than two independent groups, making it an appropriate choice for our study. The test statistic is a measure of the extent of divergence between the distributions of the groups under comparison. In this context, the null hypothesis posits that the distributions of the groups are identical. For the purpose of this test, the levels of projects were grouped into 2 categories: 'Few', representative of

Level 1 and 2 projects, and 'Many', representative of Level 3, 4, and 5 projects.

In both the scenarios comparing groups with and without interest alignment, when the number of backers is 'Few' or 'Many', the p-values are greater than the conventional significance level of 0.05, with values 0.096 and 0.076 respectively. This suggests that there is not a statistically significant difference in the distributions of the pledged amounts, leading us to fail to reject the null hypothesis.

However, for the scenarios comparing groups with 'Few' and 'Many' backers, the p-values are less than the conventional significance level of 0.05, leading to the rejection of the null hypothesis. This implies that there is a statistically significant difference in the distributions of the pledged amounts between the groups under comparison in these scenarios. In the context of the Herding Hypothesis, the number of previous backers seems to have a stronger effect on the amount pledged when there is no interest alignment compared to when there is interest alignment. This can be seen by the difference in t-value of 11.252 and 26.681 for groups with interest alignment and without respectively

5 | Discussion

The Distinctiveness Hypothesis posits that projects with fewer previous backers will receive increased support when potential new backers feel they identify with the project. In the context of crowdfunding, this theory predicts that potential backers may be more inclined to support projects that have not yet been widely discovered, as this could provide a sense of uniqueness and distinctiveness. However, our analysis did not find strong evidence to support this hypothesis. The regression model, which included an interaction term to capture the combined effect of interest alignment and the level of previous backing, did not yield statistically significant results. The results from the Kruskal-Wallis H test also suggest that the presence or absence of interest alignment does not significantly influence the amount pledged by backers, neither when the number of previous backers is 'few', nor when it is 'many'. This could be interpreted as the backers' decision-making regarding the amount to pledge being independent of their personal interest alignment with the project.

One potential explanation for this finding could be related to the psychological concept of social proof. In many decision-making contexts, individuals often look to the behavior of others as a guide for their own actions, particularly in situations of uncertainty. In the context of crowdfunding, potential backers may be more influenced by the perceived popularity of a project (as indicated by the number of previous backers) than by their personal alignment with the project. This could potentially override the desire for distinctiveness, leading to an overpowering herding effect rather than a distinctiveness effect.

The Herding Hypothesis, on the other hand, received strong support from the analysis. This hypothesis posits that projects with a larger number of previous backers will receive increased support from new backers. The regression model, which examined the relationship between the level of previous backing and the amount pledged, yielded statistically significant results. This suggests that the Herding effect is a significant driver of backing behavior in crowdfunding contexts. The results from the Kruskal-Wallis H test support this hypothesis as seen by the number of previous backers (categorized as 'few' or 'many') which exerts a significant influence on the amount pledged by backers, irrespective of whether there is interest alignment or not. This could be indicative of the fact that the perceived level of public support for a project, as reflected by the number of previous backers, is a pivotal determinant in the decision-making process of backers regarding the amount to pledge. Interestingly, the t-values from that analysis, show that when there is no interest alignment, the effect of the level of social support is stronger compared to when there is interest alignment. This gives further insight into the moderators of the herding effect. Potential backers are more influenced by the actions of previous backers, when they do not have a personal connection or alignment with the project. As such, they are more vulnerable and effected more greatly by the level of social support perceived.

The herding effect can be explained by several psychological mechanisms. One such mechanism is informational cascades, where individuals infer information from the actions of others and then follow suit. In the context of crowdfunding, potential backers may perceive a project with many previous backers as being of high quality or low risk, leading them to also back the project. Another mechanism is social influence, where individuals conform to the behavior of others in order to fit in or be accepted. Potential backers may feel a social pressure to back popular projects, leading to a herding effect.

In conclusion, our analysis suggests that the Herding Hypothesis is a significant factor in crowdfunding behavior, while the Distinctiveness Hypothesis may not play a significant role. These findings contribute to our understanding of the dynamics of crowdfunding and provide valuable insights for both project creators and crowdfunding platforms.

6 | Conclusion

In conclusion, this research embarked on an empirical exploration of the impact of perceived public support on decision-making in reward-based crowdfunding. The study was guided by two central hypotheses: the Distinctiveness Hypothesis and the Herding Hypothesis, both of which sought to understand the effect of social influence on backers' behavior in the crowdfunding context.

The Distinctiveness Hypothesis, which proposed that projects with fewer previous backers would receive increased support when new backers identify with the project, did not find substantial empirical support. This suggests that the desire for uniqueness and distinctiveness may not be a significant driver of backing behavior in crowdfunding contexts. Conversely, the Herding Hypothesis, which posited that projects with a larger number of previous backers would receive increased support from new backers, was robustly supported by the data. This finding underscores the influence of social proof in crowdfunding, suggesting that potential backers are significantly influenced by the perceived popularity of a project. This effect is stronger when there is no personal identification with the projects.

The implications of these findings are twofold. Theoretically, they contribute to the understanding of decision-making processes in crowdfunding, highlighting the importance of social factors. Practically, they provide valuable insights for project creators and crowdfunding platforms, suggesting that strategies to demonstrate public support could be effective in attracting backers.

Looking forward, these findings open up several avenues for future research. Further studies could delve deeper into the psychological mechanisms underlying the observed herding effect, such as informational cascades and social influence. Additionally, other potential determinants of crowdfunding behavior, beyond perceived public support, could be explored. This research has laid the groundwork for such inquiries, contributing to the field of crowdfunding research.

7 | References

[Althoff and Leskovec, 2015] Althoff, T. and Leskovec, J. (2015). Donor retention in online crowdfunding communities: A case study of donorschoose.org. *Proceedings of the ... International World-Wide Web Conference. International WWW Conference*, 2015.

[Baddeley, 2010] Baddeley, M. (2010). Herding, social influence and economic decision-making: Socio-psychological and neuroscientific analyses. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 365:281–90.

[Beier and Wagner, 2016] Beier, M. and Wagner, K. (2016). User behavior in crowdfunding platforms - exploratory evidence from switzerland.

[Henrich et al., 2014] Henrich, A., Jablan, S., and Johnson, I. (2014). The signed weighted resolution set is not a complete pseudoknot invariant. *Journal of Knot Theory and Its Ramifications*, 25.

[Hong and Ryu, 2019] Hong, S. and Ryu, J. (2019). Crowdfunding public projects: Collaborative governance for achieving citizen co-funding of public goods. *Government Information Quarterly*, 36(1):145–153.

[Leonardelli et al., 2010] Leonardelli, G., Pickett, C., and Brewer, M. (2010). Optimal distinctiveness theory. *Advances in Experimental Social Psychology - ADVAN EXP SOC PSYCHOL*, 43:63–113.

[Rahayu et al., 2021] Rahayu, A. D., Putra, A., Oktaverina, C., and Ningtyas, R. A. (2021). Herding behavior in the stock market: A literature review. *International Journal of Social Sciences Review*, 1(2):08–25.

[Song et al., 2022] Song, C., Luo, J., Holtta-Otto, K., Seering, W., and Otto, K. (2022). Crowdfunding for design innovation: Prediction model with critical factors. *IEEE Transactions on Engineering Management*, 69(4):1565–1576.