EFFECTS OF SOCIAL MEDIA ON DIFFUSION OF RESPONSIBILITY IN CROWDFUNDING

BY

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THESIS

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ABSTRACT

One of the growing industries in today’s world is the crowdfunding industry. Crowdfunding can be considered as a collaborative social media. Since the early stages of its development, crowdfunding has made use of social media as a way of attracting more people to fund projects. Therefore, there have been many studies on the effect of social media on crowdfunding campaigns and how these campaigns can benefit from using features provided by social media websites.

One of the unique characteristics of crowdfunding is a trait called “Diffusion of Responsibility”. This happens when there is a decrease in a person’s tendency of helping others in presence of other people. What we want to do in this study is to see how much diffusion of responsibility actually exists and whether it can be affected by the features unique to the social media websites. In this study we are particularly interested in examining the effects of Facebook on the diffusion of responsibility effect observed in crowdfunding.

Previous research on the diffusion of responsibility effect shows that potential backers may be demotivated to fund a project when it has reached a high level of funding. There is, however, a lack of research on whether tie-strength between the backers may moderate the diffusion of responsibility effect. To study this, we designed an interface to examine how the level of existing support may interact with the strength of relationships to impact people’s attention to a project and their decision to fund. Results will have important implication to campaign strategies in crowdfunding.
To my parents for their unconditional love and Salim for all his help and support.
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CHAPTER 1

INTRODUCTION

Crowdfunding has created new ways for entrepreneurs to finance their ideas. Crowdfunding websites ask for contributions of investors over a fixed time limit which is generally a few weeks. The dynamics of crowdfunding websites involves several parties. There is project “creators” who ask people to fund the projects they created. There is project “backers” who provide financial support for the projects [1].

In these crowdfunding communities, backers can see how much other project backers have supported the project as well as how long the project has until it meets its goal. This suggests that social information, such as others’ funding decisions, play an important role in the ultimate success of a project. This can also help promote campaigning these projects and broadcasting information. Therefore many studies have been conducted on the effects of social media and its features on crowdfunding campaigns. The result of these studies could provide a new way of looking at crowdfunding as a platform, finding new ways to fund projects and guaranteeing success. It can also provide a persuasive technique in leveraging technology for motivating people and encouraging them to be more active in the crowdfunding environment. The broader impact of the result of these studies can affect fields such as Human-Computer Interaction and Social Computing in getting more involved with the effects of social interaction on the way people tend to fund projects. All of the facts mentioned above provide a motivation for studying the effects of social media on crowdfunding projects.

Previous research on the social psychology theory of diffusion of responsibility shows that backers tend to fund a project less if it has been supported by a large number of backers. The reason for that is because they assume others will provide the necessary funding and that they don’t need to fund
This is called the Diffusion of Responsibility effect. Diffusion of responsibility is defined as a decrease in a person’s tendency of helping in presence of other people. Fischer et al. show in their study that this phenomenon happens in many situations such as non-emergency situations of answering the door, helping with a flat tire, etc [3]. In such situations, people will assume that some one will eventually go for help and therefore they don’t need help the person who is in that situation. To put it in other words, I don’t have to help them because some one else will.

Diffusion of responsibility can be a negative example of past backer support of a cause. Whereas donating money to a cause such as a charity case where alot of past backer support exists can be an example of a positive effect. The question will be when is past backer support a positive trait and when is it a negative trait: Is it related to the people forming the past support, their relationship to the person who wants to provide support and the dynamics between them? That is the reason it is important to find the way social ties affect people’s tendency to participate in crowdfunding campaigns.

Social media has an important role in our life as well as in crowdfunding. Since we live in a world where the environment in which we communicate lacks trust, people rarely trust advertisements or any other information that comes from a source they do not personally know [4]. That is why crowdfunding campaigns might benefit from advertising their projects on social media. Tie-strength is a term called for the closeness of some one and their friends in social networks. This characteristic can affect many decisions that people make in the context of social networks. Gilbert et al. show in their study that tie-strength can improve the design of social media such as providing information to friends [5]. This can also help with providing information on crowdfunding campaigns to friends of the creators and as a result, helping creators to find more backers.

There has been studies in entrepreneurship and finance that show connections between startup projects and social media [1]. Among these, Facebook has been studied for the effects it has on social behavior such as the study done by Ellison et al. [6] on the benefits of Facebook “friends”. Due to the interesting dynamics of friends on Facebook, we decided to do the study on
effects of Facebook, as a social media with all its features, on the diffusion of responsibility effect. We want to see whether the tie-strengths of “friends” on Facebook interacts with the diffusion of responsibility effect as they decide to fund a project. In particular, we want to see whether diffusion of responsibility effect diminishes based on who in the backers social circle proposes the project. For example, it is possible that close friends and family members may show a stronger diffusion of responsibility effect at the initial stage of funding than other friends. To test this, we designed a Facebook application to study how these behaviors change if we put the projects in the context of Facebook.

We will explain the procedure of our study in the following chapters: Chapter 2 reviews the related literature and introduces the definitions and backgrounds needed for the rest of the thesis. After describing the background, in Chapter 3 we describe the research that has been done into the details of the study. Chapter 4 describes the hypotheses that we want to prove with this study. We then discuss the experiment in Chapter 5 and cover the results of our experiments in Chapter 6. Finally we conclude our study in Chapter 7 and discuss the results and talk about the future work in Chapter 8.
CHAPTER 2

RELATED WORK

2.1 Dynamics of Kickstarter

Figure 2.1: A Kickstarter Project Page (1)

Figure 2.1 shows an example of a Kickstarter project page. As shown in the figure, there are several metrics specific to each project. These metrics are as follows:

1. Funded: Refers to the amount of money already raised for the Kickstarter campaign. In this example, the funded amount of money is $3,797.
2. Pledged: Refers to the goal of the campaign, the final amount of money the creator desires to raise. In this example, the pledged amount of money is $33,400.

3. Backers: Refers to the number of people that have already donated money to the campaign. In this example, the number of backers is 136.

4. Days to go: Refers to the number of days that is remained for the creator of the campaign to raise the intended amount of money (or the goal of the campaign). In this example, the number of days to go is 25.

Figure 2.2 shows the rest of the page, which includes information about the creator, description of the project, rewards, etc. These are all potential factors that can impact a project’s success [7].

2.2 Diffusion of Responsibility

In their study, Kuppuswamy et al. show that backer support for a reward-based crowdfunding project is negatively related to its past backer support.
They observe that many project backers do not fund a project that has received a lot of funding because they think that the other backers will support the project. They also found out that as the project deadline draws near, the diffusion of responsibility effect diminishes. Additionally, as the project approaches its final stages of funding, there tends to be more updates on the project, which increases project support in the final stages of funding, when combined with the reduced diffusion of responsibility effect [2].

According to Mitra et al., individuals shift their contributions away from a project when there is a high number of contributions from others for that project. They suggested in their paper that this is a partial crowding-out effect, where contributors may experience a fall in their marginal utility from making a donation since it loses its importance to the recipient. Another finding by Mitra et al. was that frequency is negatively correlated with reading the story's publication, which could mean that measures of contribution behavior can help predict the quality of a project's final outcome following its implementation [13].

2.3 Effects of Social Media on Crowdfunding Project Results

Moisyev explores in his research the effect of social media on crowdfunding results with the goal of helping individuals and business owners identify factors that help them predict the success or failure of their projects. He found out that a total of 546 likes could be enough for fundraising a project. It was also shown that the contribution of one like to the overall fundraising goal increases as the total number of likes go higher. Therefore, when there is a small number of likes, the change is not significant, but when a project receives a large number of likes, the effect is important [1].
2.4 Friends and Family in Crowdfunding

One of the interesting features in online crowdfunding websites is the geographic dispersion of backers. Agrawal et al. examine a crowdfunding setting that connects artistic projects with backers all over the world for funding. The average distance between the creators of these projects and backers is about 5,000 km, which plays an important role. They observe that within one single round of financing, local backers fund the projects relatively early, and they appear less responsive to past backer support. They show this effect in distance is due to a personal relation with the creators of the projects (“family and friends”) [8].

2.5 Investment Patterns in Crowdfunding

An important factor in the decision of backers in funding a project is the information they receive on the past contribution behavior which includes amount, timing and other statistics that are published for each project. Burtch et al. examine social influence in their study on crowd-funded marketplace. They show that individuals tend to shift their contributions away from a project when the past backer support of that project is high. This suggests a partial crowding-out effect, similar to the diffusion of responsibility effect studied by Kuppuswamy et al. [2]. According to the reinforcement theory, the more the initial contributions, the more positive of an effect it has on later contributions as the information on prior activity of backers affects later potential funding [9].

2.6 Effects of Facebook Friends on Projects’ Success

In their study, Mollick et al. showed there is a relationship between Facebook friends and the success status of a crowdfunding project. They found that based on a sample of Kickstarter projects in a film category with a goal of not less than 5000 dollars, project creators who had 10 Facebook friends have a 0 percent chance of succeeding, where those with 100 friends have a 20 percent chance and those with 1000 friends have a 40 percent chance of success [10].
2.7 Heterogeneous Traits in Crowdfunding

In a study done by Rakesh et al., it was shown that backers are strongly influenced by their topical preference and the trust relationship towards the creator of projects. In their analysis, they revealed that the backing habits of the backers are influenced by their social circle (or their community). They also studied the effect of geo-location and reported that the effect is not uniform for all the projects; instead, it depends on the topical category of the project [11].

2.8 Impacts of Social Media on Crowdfunding

In their study, Lu et al. consider the dynamics of crowdfunding from two aspects: how crowdfunding and promotional activities that happen on social media evolve through time together, and how the promotional campaigns affect the result of these crowdfunding activities. They identified a number of factors that play an ineffective campaigns. Among these factors are temporal distribution of customer interest, strong correlations between a crowdfunding projects early promotional activities and the final result, and the importance of concurrent promotion from multiple sources. Lu et al. show that these factors can help predict important quantities related to crowdfunding projects such as overall popularity and the success rate of the project [12].

2.9 Design of Crowdfunding Projects

In their work, Xu et al identified different types of project updates that creators of the crowdfunding projects make during their campaigns. They also found differences between the stated design intent and the actual uses of project updates such as its use in social promotion. One significant result that they talk about in their paper is how project creators communicate with potential backers during a campaign has a more significant role in predicting success than the design of the project page. They concluded that designers should consider the functionality of project updates and how to better support their various uses in a campaign [14].
2.10 Social Capital in Crowdfunding

In a study done by Giudici et al. the role of social capital is distinguished by two definitions: ‘individual’ social capital, and ‘territorial’ social capital where the latter is a diffused and shared asset and the former is an exclusive and proprietary asset. They found that individual social capital has a significant positive effect on the chance of reaching the target fund, while territorial capital has no significant effect. They even found that territorial social capital may be undesirable for crowdfunding, since it marginally weakens the signalling effect of the individual social capital. In their paper, they also discuss an adverse selection problem, which is that in desirable local conditions, good-quality projects may more easily attract funds, with no need to tap the crowd of the Internet. As a result, crowdfunders face a rationing problem, and negatively discount a large territorial social capital when evaluating the signal from individual social capital. This problem should come to attention of managers of crowdfunding web sites, to the extent of avoiding that bad-quality projects will rely on crowdfunding, just because they are not able to raise finance elsewhere [15].

2.11 Social Buzz in Crowdfunding

Thies et al. examine the dynamic interplay between social buzz and contribution behavior in the crowdfunding context. Since it is difficult to predict the utility of crowdfunding projects, prospective backers draw on quality signals such as social buzz and prior-contribution behavior, to make their funding decisions. Furthermore, they investigated both intra- and cross-platform effects based on data collected from three platforms: Indiegogo, one of the largest crowdfunding platforms on the web, Twitter and Facebook. The results of their paper show a positive influence of social buzz on project backing, but a negative relationship in the reverse direction [16].
CHAPTER 3

RESEARCH QUESTIONS

The importance of crowdfunding has attracted many research communities such as CSCW and HCI [17], computer science [12], economics [18] and marketing [2] to do research on the topic. One of the topics in crowdfunding that has emerged in the recent years is the factors that result in the success and amount of money raised for crowdfunding campaigns. A lot of research has been focused on the fact that prior contribution [19], the campaign description [13], the campaign updates [14] and the social capital of campaign organizers [15] play an important role in a project’s success.

In addition, it is known that social media platforms such as Twitter and Facebook have developed to be one of the most important channels for people to share, broadcast and communicate with others about various crowdfunding projects [10]. Since crowdfunding has a social nature, many research works have been done on social media with the goal of showing that it plays a vital role in enhancing crowdfunding campaigns preparation, publicizing and fundraising [16,17,20].

Research has shown that in funding Kickstarter projects, current backer support is negatively correlated to past backer support of the project which is called the diffusion of responsibility effect [2]. Also there has been research on how backers support a project more if they see that their family and friends have supported that project as well [8]. Despite these advances, thus far little is known about how the impact of family and friends interacts with the diffusion of responsibility effect. In this thesis, we look to find a correlation between the aforementioned factors.

As mentioned earlier, it is believed that the crowdfunding campaigns suffer from the diffusion of responsibility effect. Our first research questions
aims to prove whether there would be less support from the backers if they see a project which is has raised more funding compared to a project which has raised less.

**RQ1: Does the current level of support interact with the previous level of support?**

The projects statistics in a platform such as Kickstarter consist of four different factors:

1. Funded: Refers to the amount of money already raised for the Kickstarter campaign.

2. Pledged: Refers to the goal of the campaign, the final amount of money the creator desires to raise.

3. Backers: Refers to the number of people that have already donated money to the campaign.

4. Days to go: Refers to the number of days that is remained for the creator of the campaign to raise the intended amount of money (or the goal of the campaign).

Since we want to study the effect of diffusion of responsibility, we only need the funded amount of money specific to each project. We have also set the same goal (between 4500 to 5000) for all the projects in our application, therefore we can consider the effect of the “goal” factor to be the same for all the projects. As for the two other factors (Number of backers and days to go), we eliminate them from our study. Thus only the funded factor is determinant of project’s statistics.

Having the funded factor for all the projects, we can observe whether the previous level of support will have a negative effect on the current level of support or in other words, whether or not the diffusion of responsibility exists.

Assuming that the diffusion of responsibility exists, we also want to see whether it would be diminished by the effect of tie-strength in the context of a social media (i.e. Facebook). We are interested to know the effect of
having family and friends among the past backer support of a project on the current level of support. That forms our second research question:

**RQ2:** Does the current level of attention interact with tie-strength in the context of Facebook as a social media?

We measure the attention level of the backer by three different metrics:

1. Remembering the project: If the individual remembers they saw a project before, that is how we know they paid attention to the project.

2. Clicking: If the individual clicks on a project, that shows they are paying attention.

3. Funding: Which is the best way of interacting with a project. If the individual decides on funding a project, that means their attention level was high enough to think that this project deserves funding.

In this study, we measure these three metrics in relation to tie-strength in the context of Facebook. We want to see whether we can find any correlation between the level of attention and tie-strength that would provide an answer to our second research question.
We proposed two research questions that we want to answer with this study in Chapter 3. Based on these two research questions, a number of hypotheses were developed. Regarding our first research question and based on the effect of diffusion of responsibility, we came up with the following set of hypotheses:

**H1: There is a direct connection between the current level of support and the previous level of support.**

To prove this hypothesis, we need to show that participant’s status of funding a project depends on the project’s funding stage, since that is the only characteristics of the project that we are doing the study on. Therefore a number of hypotheses are designed to establish a connection between the current level of support for a project and the funding stage:

**H2: There is a direct connection between the current level of support and the project’s funding stage.**

We can prove this hypothesis by measuring how the funding stage of a project affects an individual’s decision to fund a project. We measure the relationship between these two factors by defining a new variable called “stage”. This variable refers to the stage of funding the project receives. We assigned two stages of funding to the projects: “Early” and “late” stage. Early stage refers to projects that have received less than 50% of funding so far. Late stage refers to projects that have received more than 50% of funding so far. These are statistics that we assign to each project regardless of the actual final stage of the project (whether it was successful or not).

Having a specific stage for each of the projects, we can then measure how
funding decision of an individual is related to the stage of a project using Logistic Regression [21]. The test would measure any significant correlation between the independent variable stage and the dependent variable that indicates the funding decision. We call the variable that refers to the funding decision “fund” and define it as follows: Fund refers to the factor of funding or not funding the project. If the individual decides to fund the project, the fund factor is 1, if not, it is 0.

Conducting the logistic regression on these two variables, we can find out if there is a correlation between an individual funding a project (i.e. current level of support) and the funding stage of the project (i.e. past level of support).

Our next set of hypotheses are based on our second research question and the social context of the application. Here is the first hypothesis:

**H3:** There is a direct connection between the current level of attention and tie-strength on Facebook.

As mentioned in Chapter 3, we measure the level of attention by three separate variables: Remembering, Clicking and Funding. Therefore we can divide H3 into three separate hypotheses:

**H4:** There is a direct connection between clicking on a project and tie-strength on Facebook.

**H5:** There is a direct connection between funding a project and tie-strength on Facebook.

**H6:** There is a direct connection between remembering a project and tie-strength on Facebook.

To measure these three variables indicating level of attention, we define the following factors:

Click: Refers to the factor of clicking or not clicking on the project. If the individual clicks on the project, the click factor is 1, if not, it is 0.
Remember: Refers to the factor of remembering or not remembering the project. If the individual remembers the project, the remember factor is 1, if not, it is 0.

Fund: Refers to the factor of funding or not funding the project. If the individual decides to fund the project, the fund factor is 1, if not, it is 0.

Therefore to prove this hypothesis, we need to show that participant’s status of either remembering, clicking or funding a project depends on the tie-strength between him and the Facebook friend who suggested the project. We can achieve this by conducting a logistic regression on these variables and the tie-strength of the two people. For measuring tie-strength we use the following definition:

Close: Refers to the tie-strength factor that exists between an individual and his friends. We categorize the close factor into “being close” and “not being close”. If a friend is close, we assign a value of 1 to this variable. If a friend is not close, we assign a value of 0. We will talk more about how we choose which friend is close and which friend is not in Chapter 5.
5.1 Study Procedure

In order to test the hypotheses in question, we designed a Facebook application. We conducted the study with the explanation that we are building a plugin for Kickstarter on Facebook. We chose Facebook and Kickstarter as our social media and crowdfunding website respectively, because the impact of social ties has been shown to exist on Facebook. Research has shown that participation in the Facebook community makes it possible to maintain contact with a larger and more diverse list of friends [22]. Kickstarter, on the other hand, is chosen because of the large number of successfully funded projects (more than 85,000) [7].

5.2 Interface Design

The Facebook application that we designed has seven different pages. In the first page, participants will log in using their Facebook ID into the application and they would see a list of all their Facebook friends. They have to choose 5 friends who they are close with and we will then choose 20 random friends other than the 5 they already chose to assign to them. This is shown in Figure 5.1. The purpose of this selection is to see how their funding patterns may change if a project is suggested to them by a close friend vs. a not-so-close friend or an acquaintance.

In the second page, we ask participants to tell us their relationship to the 5 close friends they chose in the first page. They can write roommate, sibling, colleague, etc. The reason for that is to see how they are defining their closeness with their friends. After that, they go to the third page in which
they are supposed to rank the 5 friends they chose and the random 20 friends we assigned to them based on their tie-strength. For this we used a 7-scale likert scale as shown in Figure 5.2. The reason for this step is to see how tie-strengths between the participants and their friends affect their decision in funding a project.

As Figure 5.3 shows, the forth page of the interface will ask the participant to rank the chosen friends based on the knowledge-level of Kickstarter project categories. The reason for this is to assign relevant projects to friends. We want some one who is either an expert or has a good level of knowledge in Technology to be proposing a project in that category. This makes the interface a bit more real, because participants will see their friends proposing projects that is either in their field of expertise or in their field of interest.

In the fifth page, as shown by Figure 5.4, we will have participants see their newsfeed along with some Kickstarter projects proposed by their chosen friends. The projects that are presented will also have different attributes based on which friend proposed them. They will differ in the amount of money pledged and the funded percentage. We want to be able to study how much the choices participants make in funding a project depend on the project’s attributes and the diffusion of responsibility effect as well as the order in which their friends are selected. We want to be able to observe
Figure 5.2: Third Page of the Interface

Figure 5.3: Forth Page of the Interface
whether tie-strength and knowledge-level can actually affect a person’s choice over diffusion of responsibility effect.

The sixth page of the application would be the Kickstarter page. This page will show up if the users click on see more below one of the Kickstarter project descriptions in their newsfeed. The Kickstarter page would look exactly like the actual page of the project, with the difference that the project attributes would be static and pre-chosen. To measure how their funding patterns may change, we will measure whether they click on the Fund this project button or not. Also, we will conduct a memory test at the end. We hypothesize that memory of project details could also be a good proxy measurement of whether they would fund the project later. After going through their news-

![Figure 5.4: Fifth Page of the Interface](image-url)
feed, they will be directed to another page, which will be our seventh page, in which they have to choose the projects they remember seeing in their newsfeed. They will be faced with a pool of projects and have to click on the ones they remember seeing. Then they will go to the eighth page, in which they have to answer the following questions related to each project that they said they remembered:

1. Would you fund this project?
2. Do you remember the amount of goal for this project?
3. Do you remember the percentage of funded money for this project?
4. Do you remember under which friend’s post you saw this project?

For questions 2, 3 and 4, we also ask them to what extent did that factor affect their decision in funding or not funding the project. This can be seen in Figure 5.5.

5.3 Data Collection

For this study, we recruited 29 participants. We were looking for participants who had a Facebook account, have worked with Kickstarter before and preferably have funded projects in crowdfunding websites. We also asked them some questions in order to know more about their social media and crowdfunding background such as: How frequently do you use Facebook?, What crowd-funding websites do you use?, etc.

5.4 Statistical Analysis

After completion of the data collection, we used R language for doing the data analysis [23]. Since R is an open source language, we found it more helpful to use. We used ANOVA [24] and logistic regression on our data to find out the correlations between our different metrics. The factors under
This book is an alphabet book by sound. Each page is full of hand drawn fonts and images to help kids learn while having fun.

Would you fund this project?  ○ Yes  ○ No
To what extent did the idea affect your decision?
Not at all  ○  ○  ○  Quite  ○  ○  Very much  ○  ○  ○
Do you remember the amount of goal for this project?  ○ Yes  ○ No
To what extent did the amount of goal affect your decision?
Not at all  ○  ○  ○  Quite  ○  ○  Very much  ○  ○  ○

Figure 5.5: Eighth Page of the Interface
the study are as follows:

1. Success: Refers to the project being initially successful or not. We chose the projects that we display to the participant from a pool of finished Kickstarter projects. Half of the projects chosen are successful and the other half are unsuccessful. We chose the success factor of 1 for projects that are successful and 0 for the ones that are unsuccessful.

2. Close: Refers to the tie-strength factor that exists between an individual and his friends. Based on Figure 5.2 and the ranking that each friend receives, we categorize the close factor into “being close” and “not being close”. For the rankings 7, 6 and 5, we decided the friend is “close” and therefore assigned a value 1. For the other rankings, we decided the friend is “not close” and assigned a value 0 to it.

3. Stage: Refers to the stage of funding the project receives. We assigned two stages of funding to the projects: “Early” and “late” stage. Early stage refers to projects that have received less than 50% of funding so far. Late stage refers to projects that have received more than 50% of funding so far. These are statistics that we assign to each project regardless of the actual final stage of the project (whether it was successful or not).

4. Time: Refers to the time each individual spends looking at each project in his newsfeed. Looking at Figure 5.4, one can see that projects are embedded in each individual’s newsfeed. The time they spend looking at each of these projects is the “time” factor for that project.

5. Click: Refers to the factor of clicking or not clicking on the project. If the individual clicks on the project, the click factor is 1, if not, it is 0.

6. Remember: Refers to the factor of remembering or not remembering the project. If the individual remembers the project, the remember factor is 1, if not, it is 0.

7. Fund: Refers to the factor of funding or not funding the project. If the individual decides to fund the project, the fund factor is 1, if not, it is 0.
CHAPTER 6

RESULTS

We recruited 29 participants for our study. Among these were 13 males and 16 females. 15 of them were aged between 18-25. 7 of them were aged between 25-35. 4 of them were aged between 35-50 and 3 of them were aged between 50-64. 6 of them were or have already majored in Computer Science. 2 were computer engineers, 2 were biological engineers, 2 were social workers and the rest has a background in a different field than the ones mentioned.

The study took almost a month to complete. We first did a couple of pilot studies to test whether the interface is functional and to see whether it needs any changes. During the first pilot study, we realized that making the posts about Kickstarter projects a bit more personalized helps the participants find them more believable. Therefore we added some text to the posts saying that they (participant’s Facebook friends) have funded the projects themselves or encourage people to take a look at that project. This made our following pilot studies much more successful.

Data gathered from our 29 participants shows that they mostly use Facebook as a social media and they check Kickstarter more frequently among crowdfunding websites. On average, they have funded 3.2 projects and these are some of the most common reasons they decided on funding those projects:

1. Suggested by a good friend.

2. Has an important goal to achieve or has a good cause.

3. Knowing the creator of the project personally.

4. Has a well-known creator.
5. Has a good product.
7. Being personally involved in the project.

After gathering all the data, we conducted several analyses on it to find out potential correlation that exist in the data. Here are the analytical tests that we did:

6.1 ANOVA on time with success, closeness, stage and click

In the ANOVA test, we are testing the correlation of independant variables with a dependant variable. We first start with a 4-way ANOVA with all our independent variables: success state of the projects, closeness of the friend suggesting it, funding stage of the project and the clicking state of it. We want to see the effect of these independent variables on our dependent variable, time. Using the ANOVA test in R we used the following command:

\[
\text{aov(} \text{data}\$\text{time} \sim \text{data}\$\text{success} + \text{data}\$\text{close} + \text{data}\$\text{stage} + \text{data}\$\text{click} + \text{data}\$\text{success:data}\$\text{close:data}\$\text{stage: data}\$\text{click}, \text{data=data})
\]

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>success</td>
<td>1</td>
<td>231</td>
<td>230.66</td>
<td>7.475</td>
<td>0.00678 **</td>
</tr>
<tr>
<td>close</td>
<td>1</td>
<td>147</td>
<td>146.97</td>
<td>4.763</td>
<td>0.03016 *</td>
</tr>
<tr>
<td>stage</td>
<td>1</td>
<td>5</td>
<td>5.28</td>
<td>0.171</td>
<td>0.67953</td>
</tr>
<tr>
<td>click</td>
<td>1</td>
<td>158</td>
<td>157.82</td>
<td>5.114</td>
<td>0.02472 *</td>
</tr>
<tr>
<td>success:close:stage:click</td>
<td>11</td>
<td>241</td>
<td>21.87</td>
<td>0.709</td>
<td>0.72974</td>
</tr>
</tbody>
</table>

Table 6.1: ANOVA on time with success, closeness, stage and click

According to Table 6.1, since there is not a significant effect in the 4-way interaction of these 4 variables, we move forward with doing ANOVA tests on each 3 of these 4 variables.
6.2 ANOVA on time with success, closeness and click

Here there are three independant variables, which are the success state of the project, the closeness of the friend suggesting it and the state of clicking or not clicking on the project. Using the ANOVA test in R we used the following command:

\[
aov(formula = data$time \sim data(success + data(close + data(click + data(success:close:click, data = data)
\]

<table>
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<tr>
<th></th>
<th>Df</th>
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<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>success</td>
<td>1</td>
<td>154</td>
<td>154.35</td>
<td>4.834</td>
<td>0.0284 *</td>
</tr>
<tr>
<td>close</td>
<td>1</td>
<td>5</td>
<td>5.28</td>
<td>0.166</td>
<td>0.6837</td>
</tr>
<tr>
<td>click</td>
<td>1</td>
<td>130</td>
<td>130.05</td>
<td>4.099</td>
<td>0.0441 *</td>
</tr>
<tr>
<td>success:click</td>
<td>4</td>
<td>49</td>
<td>12.25</td>
<td>0.386</td>
<td>0.8184</td>
</tr>
</tbody>
</table>

Table 6.2: ANOVA on time with success, closeness and click

As Table 6.2 shows, the two significant factors are success and click. Therefore we plotted two figures to study their significance.

Figure 6.1 shows the time participants spent on each project when the project was originally successful. Figure 6.2 shows the time participants spent on each project when the project was originally unsuccessful. Looking at these two figures, it can be concluded that when a project was originally successful, participants spent less time on projects that were in a late stage. However, when the project was originally unsuccessful, participants spent more time on projects that were in a late stage. The pattern is almost the same for projects that were clicked on vs. the ones that participants didn’t click on.

6.3 ANOVA on time with success, closeness and stage

Here there are three independant variables, which are the success state of the project, the closeness of the friend suggesting it and the funding stage of the project. Using the ANOVA test in R we used the following command:
Figure 6.1: Time spent on clicked on vs. not clicked on projects in early and late stages (successful projects)

Figure 6.2: Time spent on clicked on vs. not clicked on projects in early and late stages (unsuccessful projects)
aov(formula = data$time ~ data$succeed + data$close + data$stage + data$succeed: data$close: data$stage, data = data)

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
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<tbody>
<tr>
<td>success</td>
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<td>231</td>
<td>230.66</td>
<td>7.483</td>
<td>0.00673 **</td>
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<tr>
<td>close</td>
<td>1</td>
<td>147</td>
<td>146.97</td>
<td>4.768</td>
<td>0.03003 *</td>
</tr>
<tr>
<td>stage</td>
<td>1</td>
<td>5</td>
<td>5.28</td>
<td>0.171</td>
<td>0.67935</td>
</tr>
<tr>
<td>success:stage</td>
<td>4</td>
<td>159</td>
<td>39.77</td>
<td>1.290</td>
<td>0.27476</td>
</tr>
</tbody>
</table>

Table 6.3: ANOVA on time with success, closeness and stage

Looking at the result of the ANOVA test in Table 6.3, we can see that success and closeness are the two factors that are more significant. In order to see their effect more precisely, we plotted Figures 6.3 and 6.4. According to Figure 6.3, the time participants spent on a successful project decreased when the project was in a late stage of funding. The decrement is more significant when the friend is a close friend. Figure 6.4 shows that the time participants spent on an unsuccessful project increased when the project was in a late stage of funding.

Figure 6.3: Time spent on projects suggested by close vs. not close friends in early and late stages (successful projects)
Figure 6.4: Time spent on projects suggested by close vs. not close friends in early and late stages (unsuccessful projects)
6.4 ANOVA on time with success and closeness

Here the two independent variables are the success state of the project and the closeness of the friend suggesting it. Using the ANOVA test in R we used the following command:

\[
aov(formula = data$time ~ data$success + data$close + data$success: data$close, data = data)
\]

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
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<tr>
<td>success</td>
<td>1</td>
<td>231</td>
<td>230.66</td>
<td>7.491</td>
<td>0.00669 **</td>
</tr>
<tr>
<td>close</td>
<td>1</td>
<td>147</td>
<td>146.97</td>
<td>4.773</td>
<td>0.02992 *</td>
</tr>
<tr>
<td>success:close</td>
<td>1</td>
<td>49</td>
<td>48.66</td>
<td>1.580</td>
<td>0.20998</td>
</tr>
</tbody>
</table>

Table 6.4: ANOVA on time with success and closeness

As Table 6.4 shows, the two independent variables success and stage have a significant correlation with the dependent variable, time. To further look into the relationship between them, we plotted Figures 6.5 to 6.8.

Figure 6.5 shows how the time participant spent on a project suggested by a close friend changed when the project was unsuccessful (0) vs. successful (1) at an early stage. As shown by the figure, participants spent significantly more amount of time on projects that were suggested by close friends and originally successful.

Figure 6.6 shows how the time participant spent on a project suggested by a not close friend changed when the project was unsuccessful (0) vs. successful (1) at an early stage. As shown by the figure, participants spent almost the same amount of time on projects that were suggested by not close friends regardless of the fact that it is successful or not.

Figure 6.7 shows how the time participant spent on a project suggested by a close friend changed when the project was unsuccessful (0) vs. successful (1) at a late stage. As shown by the figure, participants spent almost the same amount of time on projects that were suggested by close friends regardless of the fact that it was successful or not.
Figure 6.5: Time spent on successful vs. not successful projects suggested by close friends in early stage
Figure 6.6: Time spent on successful vs. not successful projects suggested by not close friends in early stage
Figure 6.7: Time spent on successful vs. not successful projects suggested by close friends in late stage
Figure 6.8 shows how the time participant spent on a project suggested by a not close friend changed when the project was unsuccessful (0) vs. successful (1) at a late stage. As shown by the figure, participants spent almost the same amount of time on projects that were suggested by not close friends regardless of the fact that it was successful or not.

Looking at Figures 6.5 to 6.8 we can conclude that close friends have an effect on the time participants spend on a project if the project is in an early stage of funding.

![Late Stage - Not Close Friends](image)

Figure 6.8: Time spent on successful vs. not successful projects suggested by not close friends in late stage

### 6.5 ANOVA on time with success and stage

Here the two independent variables are the success state and the funding stage of the project. Using the ANOVA test in R we used the following command:
aov(formula = data$time ~ data$success + data$stage + data$success: data$stage, data = data)

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>success</td>
<td>1</td>
<td>231</td>
<td>230.66</td>
<td>7.392</td>
<td>0.00706 **</td>
</tr>
<tr>
<td>stage</td>
<td>1</td>
<td>5</td>
<td>5.28</td>
<td>0.169</td>
<td>0.68119</td>
</tr>
<tr>
<td>success:stage</td>
<td>1</td>
<td>96</td>
<td>96.20</td>
<td>3.083</td>
<td>0.08046 .</td>
</tr>
</tbody>
</table>

Table 6.5: ANOVA on time with success and stage

As Table 6.5 shows, success has a significant effect on the time spent on a project. There is also a slight effect from success and stage at the same time. Therefore, to further look into the relationship between success, stage and time we plotted Figure 6.9.

![Figure 6.9](image_url)

Figure 6.9: Time spent on successful vs. not successful projects in early and late stages

As shown by Figure 6.9, the time participants spent on the project was decreased when the project was in a late stage of funding, regardless of the project being successful or unsuccessful.
6.6 ANOVA on time with closeness and stage

Here the two independent variables are the funding stage of the project and the closeness of the friend suggesting it. Using the ANOVA test in R we used the following command:

\[
\text{aov(formula = data$time \sim data$close + data$stage + data$close: data$stage, data = data)}
\]

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>close</td>
<td>1</td>
<td>154</td>
<td>154.35</td>
<td>4.834</td>
<td>0.0289 *</td>
</tr>
<tr>
<td>stage</td>
<td>1</td>
<td>5</td>
<td>5.28</td>
<td>0.165</td>
<td>0.6846</td>
</tr>
<tr>
<td>close:stage</td>
<td>1</td>
<td>7</td>
<td>6.51</td>
<td>0.204</td>
<td>0.6520</td>
</tr>
</tbody>
</table>

Table 6.6: ANOVA on time with closeness and stage

As Table 6.6 shows, closeness of the friend suggesting the project has a significant effect on the time spent on the project. We plotted Figure 6.10 to see how closeness affects time. As it can be seen in the figure, the time the participant spent on each project decreases when a close friend suggested the project and also when the project is in a late stage of funding.

6.7 Logistic Regression on click with success, closeness, stage and time

Logistic regression measures the relationship between the categorical dependent variable and one or more independent variables, which are usually (but not necessarily) continuous, by estimating probabilities. We first conduct a regression on the 4-way interaction of the independent variables, in this case the success state of the project, closeness of the friend, funding stage of the project and the time spent on the project on the dependent variable, clicking. Using the Logistic Regression analysis in R we used the following command:

\[
\text{glm(formula = data$click \sim data$success \ast data$close \ast data$stage \ast data$time, family = ‘binomial’, data = data)}
\]

Looking at Table 6.7, it can be seen that the 4-way interaction of the 4 independent variables success, closeness, stage and time is significant. There-
Figure 6.10: Time spent on projects suggested by close vs. not close friends in early and late stages

### Table 6.7: Logistic Regression on click with success, closeness, stage and time

|                  | Estimate | Std. Error | z value | Pr(>|z|) |
|------------------|----------|------------|---------|----------|
| (Intercept)      | -0.54625 | 0.30736    | -1.777  | 0.0755   |
| success          | -0.42070 | 0.27504    | -1.530  | 0.1261   |
| close            | 0.57002  | 0.27300    | 2.088   | 0.0368 * |
| stage            | 0.31260  | 0.27106    | 1.153   | 0.2488   |
| time             | 0.06149  | 0.02814    | 2.185   | 0.0289 * |
| success:close    | -2.3539  | 1.5186     | -1.550  | 0.1211   |
| success:stage    | -2.9357  | 1.6672     | -1.761  | 0.0783   |
| close:stage      | -1.2341  | 1.7610     | -0.701  | 0.4834   |
| success:time     | -0.3785  | 0.1970     | -1.922  | 0.0547   |
| close:time       | -0.4730  | 0.2183     | -2.167  | 0.0303 * |
| stage:time       | -0.3268  | 0.2171     | -1.505  | 0.1323   |
| success:close:stage | 2.9490  | 2.2419     | 1.315   | 0.1884   |
| success:close:time | 0.4775  | 0.2316     | 2.062   | 0.0393 * |
| success:stage:time | 0.5898  | 0.2673     | 2.207   | 0.0273 * |
| close:stage:time | 0.3557  | 0.2770     | 1.284   | 0.1990   |
| success:close:stage:time | -0.6599 | 0.3262     | -2.023  | 0.0431 * |
fore we look at the logistic regression of each 3 of these 4 variables in the following sections.

6.8 Logistic Regression on click with success, closeness and stage

In this case, the dependent variable is clicking and the independent variables are the success state of the project, closeness of the friend and the funding stage of the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$click ~ data$success + data$close + data$stage, family = 'binomial', data = data)
```

|                | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | -0.2173  | 0.2650     | -0.820  | 0.4122   |
| success        | -0.3066  | 0.2682     | -1.143  | 0.2529   |
| close          | 0.6490   | 0.2684     | 2.418   | 0.0156 * |
| stage          | 0.2852   | 0.2676     | 1.066   | 0.2864   |

Table 6.8: Logistic Regression on click with success, closeness and stage

6.9 Logistic Regression on click with success, closeness and time

In this case, the dependent variable is clicking and the independent variables are the success state of the project, closeness of the friend and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$click ~ data$success + data$close + data$time, family = 'binomial', data = data)
```
|                  | Estimate | Std. Error | z value | Pr(>|z|) |
|------------------|----------|------------|---------|----------|
| (Intercept)      | -0.38344 | 0.27165    | -1.412  | 0.1581   |
| success          | -0.41441 | 0.27386    | -1.513  | 0.1302   |
| close            | 0.56716  | 0.27223    | 2.083   | 0.0372 * |
| time             | 0.06023  | 0.02816    | 2.139   | 0.0324 * |

Table 6.9: Logistic Regression on click with success, closeness and time

### 6.10 Logistic Regression on click with success, stage and time

In this case, the dependent variable is clicking and the independent variables are the success state of the project, closeness of the friend and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```
glm(formula = data$click ~ data$success + data$close + data$time, family = 'binomial', data = data)
```

|                  | Estimate | Std. Error | z value | Pr(>|z|) |
|------------------|----------|------------|---------|----------|
| (Intercept)      | -0.32592 | 0.28628    | -1.138  | 0.2549   |
| success          | -0.41607 | 0.27226    | -1.528  | 0.1265   |
| stage            | 0.30712  | 0.26832    | 1.145   | 0.2524   |
| time             | 0.06887  | 0.02828    | 2.435   | 0.0149 * |

Table 6.10: Logistic Regression on click with success, stage and time

### 6.11 Logistic Regression on click with closeness, stage and time

In this case, the dependent variable is clicking and the independent variables are the funding stage of the project, closeness of the friend and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```
glm(formula = data$click ~ data$close + data$stage + data$time, family = 'binomial', data = data)
```
Table 6.11: Logistic Regression on click with closeness, stage and time

According to the results of Tables 6.7 to 6.11 which are all logistic regressions on clicking as a dependent variable, the two independent factors that have a significant effect are closeness and time. Therefore we plotted two figures, Figure 6.11 and 6.12 to see how closeness and time interact with clicking on a project.

As shown in Figure 6.11, participants had a tendency to spend more time on projects that they clicked on and were suggested by their close friend at an early stage. In both Figures 6.11 and 6.12, it is shown that more time is spent on projects suggested by close friends.

![Figure 6.11: Time spent on projects suggested by close vs. not close friends that were clicked on in early and late stages](image-url)
Figure 6.12: Time spent on projects suggested by close vs. not close friends that were not clicked on in early and late stages

6.12 Logistic Regression on fund with success, closeness, stage and time

In this case, the dependent variable is funding and the independent variables are the success state of the project, closeness of the friend, funding stage of the project and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$fund ~ data$success * data$close * data$stage * data$time, family = 'binomial', data = data)
```

According to Table 6.12, since only the interaction between success, closeness and time is significant, we will continue with doing another logistic regression on only these 3 independent variables.
### Table 6.12: Logistic Regression on fund with success, closeness, stage and time

|            | Estimate  | Std. Error | z value | Pr(>|z|) |
|------------|-----------|------------|---------|----------|
| (Intercept)| -8.5406   | 4.6570     | -1.834  | 0.0667   |
| success    | 6.8939    | 4.6955     | 1.468   | 0.1420   |
| close      | 10.1763   | 4.8749     | 2.087   | 0.0368 * |
| stage      | 7.3509    | 4.8196     | 1.525   | 0.1272   |
| time       | 0.8626    | 0.5590     | 1.543   | 0.1228   |
| success:close| -10.9669 | 4.9971     | -2.195  | 0.0282 * |
| success:stage| -6.9765 | 4.9697     | -1.404  | 0.1604   |
| close:stage| -10.9046  | 5.6263     | -1.938  | 0.0526   |
| success:time| -0.8143  | 0.5613     | -1.451  | 0.1468   |
| close:time | -1.5859   | 0.6660     | -2.381  | 0.0173 * |
| stage:time | -1.0585   | 0.6090     | -1.738  | 0.0822   |
| success:close:stage| 9.2422 | 5.9454     | 1.555   | 0.1201   |
| success:close:time| 1.6332 | 0.6709     | 2.434   | 0.0149 * |
| success:stage:time| 0.8960 | 0.6360     | 1.409   | 0.1589   |
| close:stage:time| 1.5616 | 0.8429     | 1.853   | 0.0639   |
| success:close:stage:time| -1.4015 | 0.8667     | -1.617  | 0.1059   |

6.13 Logistic Regression on fund with success, closeness and time

In this case, the dependent variable is funding and the independent variables are the success state of the project, closeness of the friend and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$fund ~ data$success + data$close + data$time, family = 'binomial', data = data)
```

|            | Estimate  | Std. Error | z value | Pr(>|z|) |
|------------|-----------|------------|---------|----------|
| (Intercept)| -2.42186  | 0.3926     | -6.167  | 6.94e-10 *** |
| success    | 0.38877   | 0.41506    | 0.937   | 0.3489   |
| close      | -0.14373  | 0.40243    | -0.357  | 0.7210   |
| time       | 0.04816   | 0.02843    | 1.694   | 0.0903   |

Table 6.13 shows there is no significant correlation between the independent variables and funding a project.
6.14 Logistic Regression on remember with success, closeness, stage and time

In this case, the dependent variable is remembering and the independent variables are the success state of the project, closeness of the friend, funding stage of the project and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$remember ~ data$success + data$close + data$stage + data$time, family = 'binomial', data = data)
```

|                | Estimate | Std. Error | z value | Pr(>|z|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | -1.9771  | 1.0076     | -1.962  | 0.04973 *|
| success        | 1.4857   | 1.1466     | 1.296   | 0.19505  |
| close          | 3.4097   | 1.3920     | 2.450   | 0.01431 *|
| stage          | 3.2093   | 1.2624     | 2.542   | 0.01102 *|
| time           | 0.4667   | 0.2061     | 2.265   | 0.02354 *|
| success:close  | -2.4412  | 1.6378     | -1.490  | 0.13610  |
| success:stage  | -3.3360  | 1.5676     | -2.128  | 0.03333 *|
| close:stage    | -4.7702  | 1.8997     | -2.511  | 0.01204 *|
| success:time   | -0.3935  | 0.2166     | -1.816  | 0.06931 .|
| close:time     | -0.7004  | 0.2643     | -2.650  | 0.00805 **|
| stage:time     | -0.6017  | 0.2327     | -2.585  | 0.00973 **|
| success:close:stage | 4.4690   | 2.2795     | 1.961  | 0.04993 *|
| success:close:time | 0.6287  | 0.2779     | 2.262  | 0.02368 *|
| success:stage:time | 0.5318 | 0.2647     | 2.009  | 0.04456 *|
| close:stage:time | 0.7054   | 0.3263     | 2.162  | 0.03061 *|
| success:close:stage:time | -0.6090 | 0.3575     | -1.703 | 0.08849 .|

Table 6.14: Logistic Regression on remember with success, closeness, stage and time

According to Table 6.14, all the 3-way interactions are significant and therefore, we will conduct logistic regression on all 3-way selections of the independent variables success, closeness, stage and time.
6.15 Logistic Regression on remember with success, closeness and stage

In this case, the dependent variable is remembering and the independent variables are the success state of the project, closeness of the friend and the funding stage of the project.

Using the Logistic Regression analysis in R we used the following command:

\[
\text{glm(formula} = \text{data\$remember \sim data\$success + data\$close + data\$stage, family} = \text{`binomial', data = data)}
\]

|        | Estimate | Std. Error | z value | Pr(>|z|) |
|--------|----------|------------|---------|----------|
| (Intercept) | 0.17355  | 0.26278    | 0.660   | 0.509    |
| success | 0.03237  | 0.26423    | 0.123   | 0.903    |
| close   | 0.03605  | 0.26424    | 0.136   | 0.891    |
| stage   | 0.38054  | 0.26383    | -1.442  | 0.149    |

Table 6.15: Logistic Regression on remember with success, closeness and stage

6.16 Logistic Regression on remember with success, closeness and time

In this case, the dependent variable is remembering and the independent variables are the success state of the project, closeness of the friend and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

\[
\text{glm(formula} = \text{data\$remember \sim data\$success + data\$close + data\$time, family} = \text{`binomial', data = data)}
\]

|        | Estimate | Std. Error | z value | Pr(>|z|) |
|--------|----------|------------|---------|----------|
| (Intercept) | -0.106057 | 0.257525   | -0.412  | 0.680    |
| success | -0.002286 | 0.267302   | -0.009  | 0.993    |
| close   | 0.007700  | 0.266069   | 0.029   | 0.977    |
| time    | 0.017731  | 0.024252   | 0.731   | 0.465    |

Table 6.16: Logistic Regression on remember with success, closeness and time
6.17 Logistic Regression on remember with success, stage and time

In this case, the dependent variable is remembering and the independent variables are the success state, the funding stage and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$remember ~ data$success + data$stage + data$time, family = 'binomial', data = data)
```

|          | Estimate | Std. Error | z value | Pr(>|z|) |
|----------|----------|------------|---------|----------|
| (Intercept) | 0.0895489 | 0.2723805  | 0.329   | 0.742    |
| success   | -0.0003788 | 0.2684198  | -0.001  | 0.999    |
| stage     | -0.3762171 | 0.2641552  | -1.424  | 0.154    |
| time      | 0.0170470  | 0.0240873  | 0.708   | 0.479    |

Table 6.17: Logistic Regression on remember with success, stage and time

6.18 Logistic Regression on remember with closeness, stage and time

In this case, the dependent variable is remembering and the independent variables are the closeness of the friend, the funding stage and the time spent on the project.

Using the Logistic Regression analysis in R we used the following command:

```r
glm(formula = data$remember ~ data$clos + data$stage + data$time, family = 'binomial', data = data)
```

|          | Estimate | Std. Error | z value | Pr(>|z|) |
|----------|----------|------------|---------|----------|
| (Intercept) | 0.085885  | 0.268562   | 0.320   | 0.749    |
| closeness | 0.009143  | 0.267301   | 0.034   | 0.973    |
| stage     | -0.376253 | 0.264155   | -1.424  | 0.154    |
| time      | 0.016922  | 0.023980   | 0.706   | 0.480    |

Table 6.18: Logistic Regression on remember with closeness, stage and time
According to the results of Tables 6.15 to 6.18, there are no significant relationships between the independent variables and the dependent variable remembering a project.
CHAPTER 7

CONCLUSION

In this study we wanted to answer the two main research questions:

**RQ1: Does the current level of support interact with the previous level of support?**

Our results show that the time participants spent on the project was decreased when the project was in a late stage of funding, regardless of the project being successful or unsuccessful. The decrement was more significant when the friend was a close friend. This depicts a decrease in the current level of support when the previous level of support was high (the project was in the second stage of funding).

Moreover, it can be concluded from our results that when a project was originally successful, participants spent less time on projects that were in a late stage and more time on projects that were in an early stage. However, when the project was originally unsuccessful, participants spent more time on projects that were in a late stage and less time on projects that were in an early stage of funding.

**RQ2: Does the current level of attention interact with tie-strength in the context of Facebook as a social media?**

In answering our second research question, we established a direct correlation between the time participants spent on the projects suggested by their friends and the closeness of their relationship. We found a that participants has a tendency to spend more time on projects suggested by their close friends which were in an early stage of funding. This result puts more focus on our answer to the first research question, which was that the current
level of support is negatively related to past backer support.

As for the level of attention, participants had a tendency to spend more time on projects that they clicked on and were suggested by their close friend at an early stage. It was shown that more time is spent on projects suggested by close friends. Therefore clicking on a project, which is a metric for measuring the level of attention, was directly correlated with tie-strength.
Crowdfunding is a new, innovative way for raising fund for one’s project. The use of crowdfunding has increased drastically in recent years. More and more people come to crowdfunding to raise money for their ideas, since it’s faster and easier than finding investors. These creators can make a video or make a social media webpage and campaign their ideas. Social media has an important role in crowdfunding. Many crowdfunding campaigns benefit from advertising their projects on social media.

In this study, we discussed the effect of Facebook as a social media on diffusion of responsibility, which is a well-studied effect in crowdfunding. We realized that when suggested by friends, the diffusion of responsibility effect doesn’t exist. In other words, previous backer support doesn’t have a negative effect on current support if there is a closeness of relationship between the backer and the person suggesting the project. However, for studying this effect, we only used the project statistics as characteristics of the posts friends made for each project. Since we only wanted to see how the diffusion of responsibility effect changes, we only looked at the funding stage of each project.

There were some challenges in the course of this study, such as making the interface as real as possible. Since we were putting some external posts in participants’ newsfeed, we had to make sure that the interface looks real and the participant believes what they are looking at. We came up with many previous pages to make sure that the feel is as close to real use of Facebook as possible. However, this problem can still be improved in future studies.

There are still many factors that can be looked at in studying the effect of social media on diffusion of responsibility. Another study that can be done on
effects of social media could be one that uses the same interface, only instead of the project statistics, it uses features of the social media (here Facebook). For example one can study how the number of likes, comments and shares that a post about a Kickstarter project receives affects people’s choice of clicking on the project or later on funding it. In this case, past backer support can be the number of likes, comments and shares that a project has received.

The study could also be done on other social media, such as Twitter, where the number of retweets could be the factor under study. Twitter has a different environment than Facebook: The follower-followee relationship is not quite like being friends on Facebook so perhaps another factor could be taken into account other than tie-strength to measure the level of closeness (being affected by the other person) of the two individuals on Twitter.
REFERENCES


