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Determining Key Drivers of Crowdfunding Success and Exploring the Social Nature of Crowdfunding

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Declaration

This is to certify that the work I am submitting is my own and has not been submitted for another degree, either at University College Cork or elsewhere. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism.

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Abstract

Initially seen as a way for individuals to raise money for causes or projects through the collective effort of friends and family, crowdfunding provides start-ups the opportunity to bypass traditional financing methods, and instead raise capital for their venture from customers and investors. Unlike traditional investing, crowdfunding success relies on a large number of individuals giving small amounts of money. This means crowdfunding campaigns are constantly looking to increase their chances of success, and stand out from other campaigns. In order to do this, crowdfunding campaigns are increasingly using social media to convey their message and project across to potential backers. Therefore, the objective of this thesis is to *identify key drivers that impact crowdfunding success and explore the social nature of crowdfunding*.

This thesis was initiated by a literature review that examined factors that impact the success of crowdfunding campaigns. While providing a comprehensive background on the determinants of success, this study also illustrates several potential avenues for future research. First, it highlights the lack of research surrounding discussion around the campaign outside of the crowdfunding platform, particularly with equity crowdfunding. This study also shows the need for more research exploring how successful campaigns were after the crowdfunding campaign.

After this literature review, the first quantitative study analyses how campaigns use social media to communicate with the crowd outside of the crowdfunding platform. Findings show that engagement with the crowd on social media positively impacted the success of crowdfunding campaigns. This study also suggests that, while within-

platform information sharing influences the overall funding, it is the multi-platform information sharing across social media that allows fundraising to exceed initial targets and tap into different social bonding behaviours (hedonic funding).

Building on research into social media and equity crowdfunding, the third study examines rewards-based crowdfunding, analysing how the fundraiser's social network changes over the course of the campaign. Findings from this paper show that the strength and breadth of the social network can impact whether the campaign reaches its funding goal.

The final study explores the second gap found in the literature; the lack of research surrounding the success of crowdfunding campaigns post-fundraising. This research paper examines the impact a crowdfunding campaign has on public sentiment, analysing how sentiment changes in the six months after the campaign.

This thesis has implications for theory, practice, and future research. First, I provide a novel perspective on crowdfunding success, showing it is not only reaching a funding target, but should be measured across different stages of the campaign. This thesis also introduces the idea that crowdfunding is a social collaboration. Through unique analysis of these campaigns and backers, along with the relationship between social media and crowdfunding, I find several factors that influence the success of campaigns. Finally, this thesis also highlights a number of interdependencies that exist, which can also impact the success of campaigns. These findings and implications are discussed at length in the final chapter.

1 Chapter One - Introduction

The research objective of this thesis is to *identify key factors of crowdfunding success and explore the social nature of crowdfunding*. This thesis provides contributions to our understanding of crowdfunding, as well as the social collaboration between crowdfunding backers and fundraisers. This thesis is presented by publication, and consists of an introductory chapter, four completed research papers, and a conclusion chapter. This chapter presents an introduction to the research in this thesis. I will first provide an overview of crowdfunding, and then discuss the underlying social aspect that is essential for crowdfunding campaigns to succeed. Next, I will discuss my motivations for undertaking this study. After this, I will discuss my research philosophy and research approach to the individual studies. Finally, I will give an overview of each of the four research papers, their individual contributions, and the major contributions of this thesis.

1.1 Research Context

In order to set the context for the chapters to follow, I will first discuss crowdfunding, providing an overview of its history and the different types. I will also talk about how crowdfunding takes advantage of a social element of funding, something that traditional methods could not.

1.1.1 What is Crowdfunding

Crowdfunding is an alternative way for entrepreneurs and start-ups to fund their venture or bring new products to the market, without the need for traditional financing methods, such as bank loans or venture capitalists (Agrawal, Catalini, & Goldfarb, 2014; Mollick & Robb, 2016). It is generally characterised as a sub-concept

of the broader concept of crowdsourcing (Belleflamme, Lambert, & Schwienbacher, 2014; Howe, 2006), where a large number of individuals contribute small amounts of money to fund a project (Ahlers et al., 2015). Belleflamme et al. (2014, p. 8) defines crowdfunding as "an open call, essentially through the internet, for the provision of financial resources 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".

Crowdfunding is not a new phenomenon, but has been around long before the term crowdsourcing was coined. Many people believe the first crowdfunding campaign was run by Joseph Pulitzer in 1884, when he raised funds from over 160,000 donors for the pedestal of the Statue of Liberty when the U.S. government could not raise the money needed (Bannerman, 2013). Since then crowdfunding has been used to fund local projects, such as collecting for charities, or sports club seeking to raise money. With technological advancements, the internet has removed the geographical barriers, and crowdfunding has become an increasingly more popular way of raising money with the rise of online platforms. The rise in popularity brought about a number of different types of crowdfunding (Gleasure & Feller, 2016b). Rewards-based platforms like Kickstarter and Indiegogo have allowed entrepreneurs to raise money for their products. In return for pledged their money to the entrepreneur, backers would receive the proposed product or service in the future. Equity-based crowdfunding platforms, such as Seedrs or Crowdcube, allow for start-ups to sell off a percentage of their company to ordinary investors. In return for their investment, backers receive a stake in the company and a share of future profits. Debt-based platforms, like Lending Club or Linked Finance, allow for backers to lend money to companies or individuals in return for repayment plus interest at an

agreed-upon time in the future. Finally, charitable crowdfunding platforms, such as GoFundMe, facilitates the donation of funds to individuals in need, or non-profit organizations.

1.1.2 Social Nature of Crowdfunding

One of the primary differences between traditional funding and crowdfunding is that it is open for everyone to contribute. For example, before crowdfunding, start-ups primarily raised money through a bank loan, or from high-net-worth business angels and venture capitalists. However, equity crowdfunding has changed this, opening up investment to everyone, with platforms like Crowdcube offering individuals the opportunity to purchase a stake in a company from as little as £10. With this stake, investors stand to make a return on investment if the company is sold, or if dividends are paid. Rewards-based crowdfunding has also enabled many entrepreneurs to fund their innovative ideas, without the need to borrow money and go into debt. In return for their funds, backers essentially pre-purchase the product. However, while receiving the product, or making a financial return on investment, may be the primary goal of backers, it has become apparent that these investors have other motivations that traditional investors do not (Bretschneider & Leimeister, 2017; Hossain & Oparaocha, 2017). Backers are choosing campaigns not solely because they like the product, but they believe in the brand and want to be part of its community (Gerber & Hui, 2013). According to Ryu and Kim (2016), these backers can be seen as 'avid fans', who are passionate about what they support, and deeply involve themselves in these campaigns. Fundraisers often look to leverage this community to ask them to share the crowdfunding campaign to their friends and family, to increase its visibility (Lu et al., 2014). Crowdfunding is built around this

social concept, with campaigns depending on their community to spread their message to other potential backers to reach their funding goal. Therefore, it made sense for us to examine where they are reaching out to these new investors; social media. After conducting a literature review of crowdfunding research papers, we found a lack of research examining the discussion around a campaign that takes place outside of the crowdfunding platform, particularly among equity crowdfunding campaigns.

1.2 Research Motivation

The research in this thesis was stimulated by both theoretical and practical motivations. Theoretically, the focus of this thesis on crowdfunding was motivated by research gaps found during the literature review. The first gap in the literature that motivated this thesis, is the lack of research investigating outside-platform discussion, particularly the influence that social media has on crowdfunding campaigns. The majority of the research that explores the effect of social media on crowdfunding has focused on the number of connections or friends that the fundraiser has (c.f. Mollick, 2014; Vismara, 2016a). While the number of connections a fundraiser is a good starting point, it does not show how or if the fundraiser is using social media to engage with the crowd and attract backers. In the literature review, I only found two research papers that attempted to capture how engaged the crowd was on social media with the crowdfunding campaign, through measuring the number of Facebook 'Shares' (Kromidha & Robson, 2016; Skirnevskiy, Bendig, & Brettel, 2017). To better understand if this interaction with the crowd influences crowdfunding campaigns, I wanted to explore further this outside-platform discussion by looking at more than one social media, examining how engaged the

crowd is with the company's posts, and whether their response was positive or negative. As well as this, I was also motivated by the lack of research examining how the fundraiser's social network changes through the crowdfunding process, and if these changes have any impact on the success of the campaign.

The second research gap identified was the lack of studies that examined post-fundraising success. From the literature review, I found that only one research paper explored post-fundraising success. Datta, Sahaym, and Brooks (2019) focused on campaigns that had reached their goal, asking creators how successful they perceived the campaign to be, and what impact it has had on the company. The majority of crowdfunding research focuses on the financial success of a campaign, defining a successful campaign as one that reaches its funding target (c.f. Colombo, Franzoni, & Rossi-Lamastra, 2015; Parhankangas & Renko, 2017). However, there have been many crowdfunding campaigns that have reached their funding target but have ultimately failed by not delivering on goods, or going out of business. One such example is Ossic, a company that raised $3.2 million on Kickstarter with a promise of 3D audio headphones, but filed for Bankruptcy in February 2019. Therefore, while the amount of funds and backers a campaign gains are significant towards its success, emphasis must also be placed on post-fundraising success.

I also decided to focus more on equity crowdfunding over any other type because compared to the other forms of crowdfunding there is little empirical research, despite the considerable public interest (Gleasure & Feller, 2016b). Much of the initial research is legal analysis focusing on regulations and restrictions (Moritz & Block, 2016). While there has been an increase in empirical studies of equity

crowdfunding (c.f. Agrawal, Catalini, & Goldfarb, 2015; Gerber & Hui, 2013; Vismara, 2016a), there is still little in comparison to rewards-based crowdfunding.

Pragmatically, I was motivated to conduct this research as it was an opportunity to inform practitioners, such as entrepreneurs who are attempting to use crowdfunding to secure funding for their venture. I thought this to be an essential aspect of my research as it ensures that entrepreneurs not only understand crowdfunding, but can be effective in the process. This research can aid future fundraisers in the crowdfunding process, helping them to save resources, avoid frustrations, and facilitate more positive outcomes.

In addition to the academic outputs which will be presented in the following chapters, I was conscious of pursuing an active approach to developing a complete understanding of crowdfunding, which I could then share with practitioners. I saw this as an opportunity to gain expertise in an emerging market, which could disrupt traditional funding models. Therefore, I participated in a number of extra-curricular activities to enhance my research.

First, I made an effort to expose myself to every element of crowdfunding, and experience how it feels to become a backer of a campaign. I backed some charity crowdfunding campaigns on GoFundMe, as well as supporting some individuals and groups on Patreon, a subscription-based rewards crowdfunding platform. The GoFundMe campaigns that I backed were because I had a personal connection to the fundraiser, and I supported artists on Patreon because I enjoyed what they were creating and wanted to help them continue to produce it. Both types of crowdfunding filled me with a sense of pride that I was able to help people who might

not receive any funding without crowdfunding. In addition to this, I also invested in Crowdcube, an equity crowdfunding platform, which launched their own equity campaign on their platform to raise funds. I invested in this crowdfunding campaign, not only to experience the process of becoming an investor, but because I have a genuine interest and passion in supporting the advancement of crowdfunding.

As well as sharing my research with academics, I also shared what I had learned with others who were interested in crowdfunding. I wrote a speculative industry-focused article detailing my opinions on the growth of crowdfunding, and compare it to the recent emergence of Initial Coin Offerings (ICOs) (Nevin & Gleasure, 2018). This was published in the Cutter Business Technology Journal (appendix 8.1). I was also asked to speak about crowdfunding at an Irish Funds Speaker Series event. The aim of the event was to impart knowledge of emerging technologies and to allow attendees to better understand and exploit the opportunities these technologies give rise to. My presentation covered the basics of crowdfunding, and lead into my research on how crowdfunding investors are motivated to fund by their identity. Along with many other presentations, this was a great opportunity for me to share my research with those interested in this area outside of academia.

1.2 Research Philosophy

In the conduct of scientific research, the actions of researchers are based on some underlying philosophical assumptions about what constitutes 'valid' research, and which research methods and approaches are appropriate for the development of knowledge. The actions of the researcher are guided by how they generate and interpret reality (Wynn Jr & Williams, 2012). These philosophical assumptions, or

paradigms, guides the researcher about the research and in the selection of tools, instruments, participants, and methods used in the study (Denzin & Lincoln, 2008). The paradigm that a researcher uses can be captured by their answers to three sets of questions regarding the ontology, epistemology, and methodology of the research (Guba & Lincoln, 1994). First, ontology is concerned with articulating the nature and structure of the world (Wand & Weber, 1993). It questions the kind of world the researcher is investigating, and what can be known about it (Crotty, 1998). While ontology is the study of being, epistemology is the study of knowledge, and is 'a way of understanding and explaining how we know what we know' (Crotty, 1998, p. 3). It questions the acquisition of knowledge, and the relationship between the researcher and the research participant (Ponterotto, 2005). Finally, methodology refers to the processes and procedures of research. It questions how the researcher intends to go about finding out "whatever he or she believes can be known" (Guba & Lincoln, 1994, p. 22), to create knowledge claims.

The research in this thesis follows the post-positivism paradigm, assuming a critical realist ontology. A critical realist argues that our knowledge of reality is derived from social conditioning, and can only be understood by the individuals that generate this knowledge (Dobson, 2002; Krauss, 2005). Critical realism recognises that reality is independent and complex, and is thus not easily apprehended, characterised, or measured (Wynn Jr & Williams, 2012). A key aspect of critical realism is the separation of reality into three hierarchical domains: the domain of the real, the actual, and the empirical (Bhaskar, 1975). The domain of the real incorporates everything that exists in reality, and the mechanism, structures, and experiences that can generate that reality (Mingers, 2004). The domain of the actual consists of all

possible events that could be generated by those mechanisms, and includes the domain of the empirical, which comprises of those events that are actually observed and experienced (Mingers, 2004). The major implication of this ontology is the recognition that what is "known to have happened does not exhaust what could happen or have happened" (Sayer, 1999, p. 12). This post-positivist stance that reality is complex, and not easily apprehended (Wynn Jr & Williams, 2012) was particularly well suited to my research into crowdfunding platforms. Unlike a positivist approach, adopting a critical realist stance enabled me to recognize that all observation is fallible and has error and that all theory is revisable (Krauss, 2005). Adopting this approach when researching crowdfunding campaigns and platforms, I understood that findings could not be generalised to other types of crowdfunding or platforms. For example, in Chapter 3, I found that social media engagement had a positive impact on overfunding. However, I realise that this might only be true for the sample of campaigns that were examined, and findings might be different when looking at other crowdfunding types or platforms. In accordance with this post-positivist stance, I recognise that the findings are in this thesis are open to falsification and would require further qualitative and quantitative research in order to strengthen them.

This post-positivism approach is seen as an alternative to the extreme positions of positivism and constructivism (Wynn Jr & Williams, 2012), leveraging aspects of both to be compatible with a relatively wide range of research methods (Sayer, 1999). This approach is particularly applicable in Information Systems research because it is primarily practice-based, and encompasses both natural and social sciences, which are the main domains of IS (Mingers, 2004; Zachariadis, Scott, & Barrett, 2013). While

critical realism is compatibles with a wide range of research methods (Sayer, 1999), it implies that the particular choices should depend on the nature of the object of the study, and what one wants to learn about it (Sayer, 1999). As crowdfunding is primarily measured through quantitative data, such as the amount raised, and the number of backers, it made sense to take a quantitative approach, utilising several quantitative methods to examine both equity and rewards-based crowdfunding. We also follow other researchers who have used this post-positivist approach to examine crowdfunding (c.f. Gleasure & Feller, 2016c).

The purpose of the following section is to introduce the main research paradigms and to justify the selection made for this thesis. As highlighted earlier, a research paradigm consists of an ontology, epistemology, and methodology, and sets the context for a researcher's study. While there many different paradigms that researchers can use to incorporate and guide research (c.f. Denzin & Lincoln, 2008), this thesis examines the paradigms suggested by Guba and Lincoln (1994), which are illustrated in Table 1-1 below.

Table 1-1: Basic beliefs of alternative inquiry paradigms adapted from Guba and Lincoln (1994)				
Paradigm	Positivism	Post-positivism	Critical Theory	Constructivism
Ontology	Naïve realism – "real" reality but apprehendable	Critical realism – "real" but only imperfectly and probabilistically	Historical realism – virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallised over time	Relativism – local and specific constructed realities
Epistemology	Dualist/ objectivist; findings true	Modified dualist/ objectivist; critical tradition/ community; findings probably true	Transactional/ subjectivist; value-mediated findings	Transactional/ subjectivist; findings created
Methodology	Experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/ manipulative; critical multiplism; falsification of hypotheses; may include qualitative methods	Dialogic/dialectical	Hermeneutical/ dialectical

1.2.1 Positivism

The basic belief system of positivism is rooted in a realist ontology, that is, the belief that an apprehendable reality exists, driven by immutable natural laws (Guba, 1990). Positivists assume that the reality is objectively given and is measurable using properties that are independent of the researcher and their instruments; in other words, knowledge is objective and quantifiable. With positivism, the epistemology is objectivist, where the researcher and the investigated 'object' are assumed to be independent entities (Guba & Lincoln, 1994). Positivists separate themselves from

the world in which they study, as they are required to remain objective in their presentation of what is reality (Healy & Perry, 2000). The methodology of positivists are experimental and manipulate. The scientific method involves systematic observation and description of phenomena within a model or theory, the presentation of hypotheses, the execution of a tightly controlled experimental study, the use of inferential statistics to test hypotheses, and the interpretation of the statistical results in regards to the original theory (Cacioppo, Semin, & Berntson, 2004; Ponterotto, 2005).

1.2.2 Post-Positivism

Post-positivism is a modified version of positivism, which arose out of dissatisfaction with some aspects of positivism (Ponterotto, 2005). With positivism, researchers assume that an objective reality is apprehendable, however with post-positivism, researchers acknowledge that an objective reality is only imperfectly apprehendable (Guba & Lincoln, 1994). Postpositivists recognise that human intellectual mechanisms are flawed and one can never fully capture a 'true' reality. Ontologically, this position is known as critical realism, which posits that while a real world exists, and is driven by natural causes, it is impossible for humans to truly perceive it with their imperfect sensory and intellective mechanisms (Cook & Campbell, 1979). Epistemologically, postpositivism maintains a modified objectivist view, abandoning the assumption that a researcher can step outside the pale of humanness while conducting research (Guba, 1990). While objectivity remains a 'regulatory ideal', it is recognised that it cannot be achieved in an absolute sense. Instead, postpositivists assume that their findings are probably true but remain open to falsification through comparison with pre-existing knowledge, and by subjecting findings to the

judgement of peers in the critical community (Guba & Lincoln, 1994). Methodologically, the biggest difference from positivism is that positivists use a modified experimental approach as a way of falsifying hypotheses, rather than verifying. Postpositivists also look to redress imbalances of positivism by doing research in more natural settings, and collecting more situational information.

1.2.3 Critical Theory

The critical theory paradigm is one of emancipation and transformation, where the researcher's proactive values are central to the task, purpose, and methods of the research (Ponterotto, 2005). The ontological position of critical theorists is that of historical realism, where a reality is assumed to be apprehendable, but was shaped over time by a collection of social, political, cultural, economic, ethnic, and gender factors (Guba & Lincoln, 1994; Healy & Perry, 2000). Critical theorists believe that these factors and structures have been wrongly crystallised as 'true' over time, and look to challenge these assumptions.

With regard to epistemology, critical theorists advocate a transactional and subjective stance, where the researcher and the investigated object are assumed to be linked (Guba & Lincoln, 1994). Therefore the findings are value-mediated, as the values of the investigator influence the inquiry. Given the importance placed on research-participant interaction, critical theory studies need to be immersed over longer periods, with the researcher encapsulated in the day to day life of the research participants (Healy & Perry, 2000; Ponterotto, 2005). This ongoing interaction with research participants gives rise to a methodology that is dialogic and dialectical, combining observation and interviewing with approaches that foster conversation

and reflection. This reflective nature allows the researcher and the participants to transform ignorance and misapprehensions into more informed consciousness (Guba & Lincoln, 1994).

1.2.4 Constructivism

The constructivist (also referred to as interpretivism) paradigm can be seen as an alternative to the positivist paradigm, where in contrast to positivism's naïve realism, constructivism holds a relativist ontological position that assumes multiple, apprehendable, and equally valid realities (Ponterotto, 2005). Constructivists believe that reality is subjective and influenced by the individual's experiences and perceptions, the social environment, and the interaction between the researcher and participant (Guba & Lincoln, 1994). The epistemology of constructivism is similar to critical theory, but broader transactional and subjective assumptions leads to knowledge created in the interaction between the researcher and participants as the investigation proceeds (Guba & Lincoln, 1994). Constructivism is also similar to aspects of critical theory with regards to the methodology. In both paradigms, investigations take place over longer periods of time, with a focus on the intense researcher-participant interaction (Ponterotto, 2005). The difference arises in the methodology with techniques used in the process, with constructivism using hermeneutics and dialectic, as opposed to dialogical techniques. A constructivist aims to identify as many constructions that exist and bring them into consensus (Guba, 1990). The individual constructions identified from interactions with participants can be refined through hermeneutical techniques, and compared and contrasted dialectically, with the aim of generating constructions with substantial consensus (Guba & Lincoln, 1994).

1.3 Research Approach

In beginning my research, I first set out to learn about the different factors that can influence the success of a crowdfunding campaign. This literature review allowed me to gain a comprehensive understanding of the features of a campaign that can contribute to its success, and set the basis of my future research into more specific areas of crowdfunding. While other studies have reviewed literature around crowdfunding (c.f. Gleasure & Feller, 2016b; Moritz & Block, 2016), this literature review was unique as it synthesised the research to make sense of how crowdfunding success is conceptualised, and the characteristics of a campaign that achieve that success. This literature review is presented in **Chapter 2**. As discussed earlier, and as shown in Figure 1-1, this study motivated me to pursue this further by highlighted two research gaps, and potential avenues for future research.

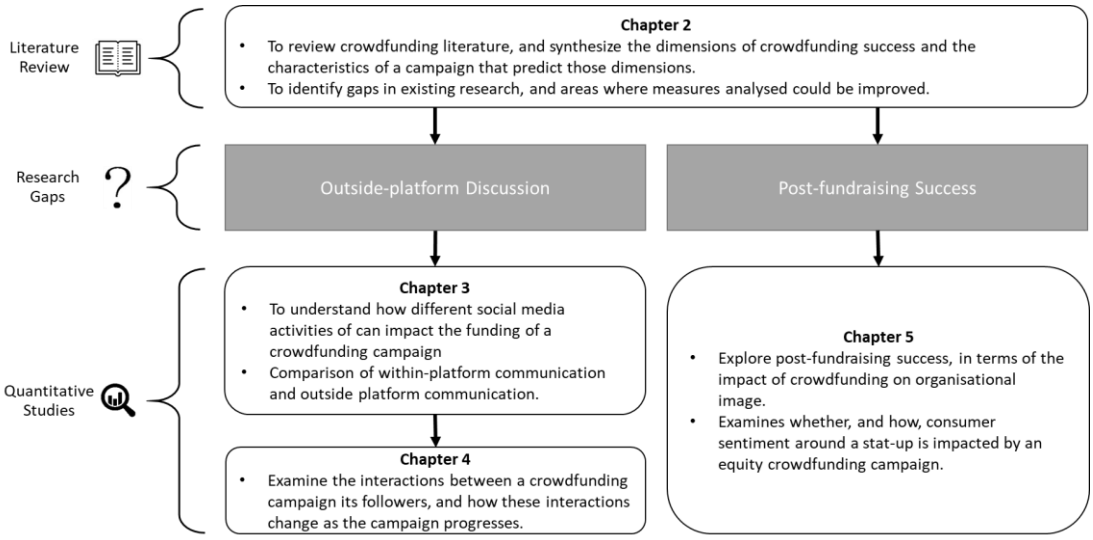


Figure 1-1: Overview of Research Objectives by Chapter

Following this literature review, each of the following chapters are empirical papers, looking to address the research gaps found. In these papers I adopted a functionalist, 'theory-then-research' approach which was developed by (Dubin, 1978), which fits

in well with my quantitative, post-positivist approach. With this approach, the goal is to examine regularities and relationships and create knowledge that can explain, predict, and control the phenomenon of interest (Torraco, 2002). Theory building takes place in a deductive manner, using prior theories as a lens to derive hypotheses (Gioia & Pitre, 1990). Data are collected and analysed in order to verify or falsify these hypotheses, with theory building occurring through revision or extension of the original theories (Gioia & Pitre, 1990). In the following section, I introduce each chapter and detail the key research papers that guided the research and helped generate the hypotheses.

First, I wanted to further explore the discussion around a crowdfunding campaign that occurs outside of the platform, by looking at the influence social media has on the success of a crowdfunding campaign. The study presented in **Chapter 3** is my first exploration into how different social media activities, such as how much you post or how many likes a post receives, can impact the overall funding of a crowdfunding campaign. This paper also compares this outside-platform communication to how companies convey themselves to the crowd on the crowdfunding platform. In this study, the primary research question is concerned with if these different types of information sharing support different types of funding behaviours from the crowd. Some of the papers that guided the formulation of hypotheses in this paper include, Gerber and Hui (2013), who first introduce the notion of identity as a motivation for backing campaigns, and Kromidha and Robson (2016), who explore social identity and crowdfunding.

The second quantitative study, presented in **Chapter 4**, addresses the lack of research that analyses the change in the fundraiser's social network through the process of a crowdfunding campaign. The research aim of this study is to understand how a crowdfunding campaign's social network changes as the campaign progress, and if these changes have any impact on the funding the campaign receives. In this paper, I lean on the work of Granovetter (1973) to generate the hypotheses to explain the importance of weak ties for a successful crowdfunding campaign.

Finally, I looked to address another research gap found in the literature review, regarding the lack of research focusing on post-fundraising success. While further analysing outside-platform discussion, **Chapter 5** primarily presents a study that explores the impact that a crowdfunding campaign has on the company's organizational image. Given how crowdfunding campaigns are funded by a large number of backers, I concluded that a good measure of post-fundraising success would be the public's opinion of the company. Therefore, I once again went to social media to measure the sentiment of the crowd in the lead up to a crowdfunding campaign, examining how it changed in the months after a crowdfunding campaign has reached its goal. In the formulation of hypotheses in this chapter, I depended on research that examined how organisations maintained their image (Dutton & Dukerich, 1991; Dutton, Dukerich, & Harquail, 1994). I also took inspiration from Gleasure and Feller (2016c), which suggested that excessive commentary from the public can be a sign of discontent among backers.

1.4 Research Overview & Contributions

In this thesis, each paper builds upon the findings of the previous studies, adding additional theories to strengthen our understanding of crowdfunding and the factors that promote the success of campaigns. Figure 1.2 below shows how, after the research areas were identified in the literature review, each quantitative paper built upon the theory and findings of the previous studies.

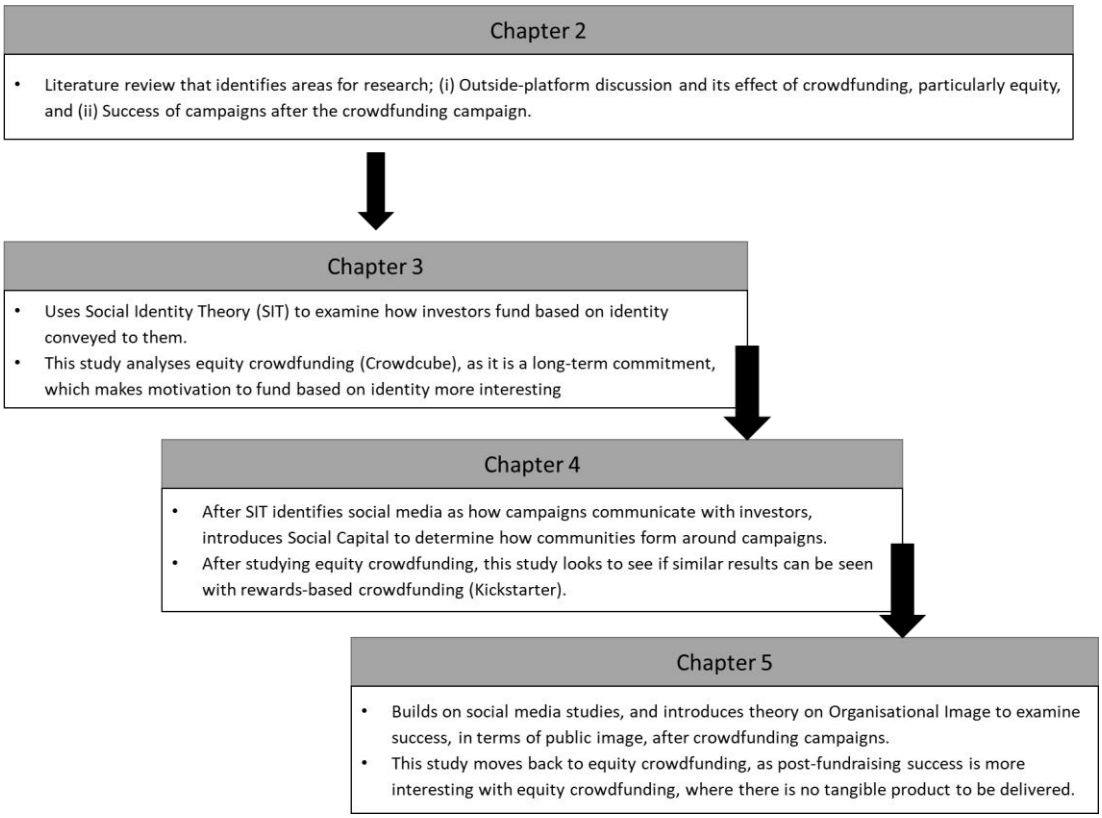


Figure 1-2: How Each Paper Builds on Theory and Findings of Previous

The paper presented in **Chapter 2** is my initial literature review into crowdfunding. Using a concept-centric approach suggested by Webster and Watson (2002), I examine several research papers that identify factors that positively or negatively impact the outcome of crowdfunding campaigns. The output from this study is a model that breaks down crowdfunding success into three dimensions; fundraising, community, and post-fundraising. This model also identifies the attributes and

factors of crowdfunding campaigns that can impact these measures of success. This paper also influences the studies that proceed it by uncovering gaps in the research, suggesting areas for future research.

In **Chapter 3** I compare how campaigns use social media to provide information outside of the crowdfunding platform, with the types of information they provide on the platform. Using social identity theory as a lens, we explore how individuals are more likely to give to crowdfunding campaigns that they identify with, and how social media is a good mechanism for companies to convey their identity. The primary finding from the study is that, while the different types of information obtained through the crowdfunding platform has a positive influence of total raised, it has no significant predictive impact on funding after the target was met. Instead, overfunding is only predicated by outside platform information sharing, as it appeals to less-business minded individuals. Crowdfunding campaigns that are more active on social media, with posts that followers identify and engage with, run a more successful campaign, in terms of the proportion of funding (overfunding). This chapter is an expanded version of a paper published in the International Conference on Open Collaboration (Nevin et al., 2017b), which can be seen in Appendix 8.2. As well as this, an early research-in-progress version of this paper was published at the European Conference on Information Systems (Nevin et al., 2017a), and can be seen in Appendix 8.3.

In the previous studies, it has been shown that interactions with the crowd on social media are vital for entrepreneurs to attract backers. Less clear is how these interactions change over the course of a crowdfunding campaign. The study

presented in **Chapter 4** uses social capital theory and social identity to explore how followers on social media form around a crowdfunding campaign, and the impact this has on the funding of the campaign. This study tracks a sample of rewards-based crowdfunding campaigns as they progress and their social media activity on Twitter. Our findings illustrate differences in the networks of campaigns that successfully reach their targets in the early, middle, or late stages of the fundraising window. One of the primary contributions of this study suggests that the crowdfunding campaigns that reached their target early in the campaign, had a relatively stable network from the outset, with a low network density, and a wide diameter. This study also reaffirms previous findings that a high level of engagement from the crowd has a positive impact on the campaign reaching the funding target.

Finally, **Chapter 5** presents a study explores the success of campaigns post-fundraising, by measuring the difference in sentiment of the public from before the campaign to after. Using literature on organizational image from both marketing and management, we theorize that as customers back crowdfunding campaigns, they transform from external consumers to internal stakeholders. One of the main contributions of this study shows that for campaigns with a high level of participation from the public, in the form of social media comments, public sentiment becomes more negative after the campaign. This challenges 'viral' strategies around public participation on social media, whereby participation signals the reliability and attractiveness of a venture to other potential investors. Another finding from this study shows that the sentiment in comments from the company undertaking the crowdfunding campaign becomes notably more positive. This suggests that these start-ups must become more positive in order to maintain a similar level of sentiment

from the public as before the campaign. An early research-in-progress version of this paper was presented at the European Conference on Social Media (Nevin et al., 2018), and can be seen in Appendix 8.4.

While all of these studies have individual contributions, as a collection of papers this thesis also produces several contributions that would be interesting to both research and practice. Figure 1-3 below outlines an overview of my research studies, and the overall contributions of this thesis.

Chapter	Conceptual Overview	Theoretical Approach	Individual Contribution
2	Literature review of the factors that assist in the success of a crowdfunding campaign.	Concept-centric Matrix	• Produces a model that conceptualises crowdfunding success, and the factors of a campaign that impact these different measures of success. • Breaks down these predictors that are consistent across the different types crowdfunding.
3	The different funding behaviours that arise from sharing information with followers on different platforms.	Social Identity Theory & Multi-sided Platforms	• While within-platform information sharing has a positive impact on overall funding, outside-platform activity is a significant predictor of funding that exceeds its target (hedonic funding).
4	Crowdfunding is an on-going engagement with followers. Creates the need to examine the fundraiser's social network and its changes during the campaign.	Social Identity Theory & Social Capital	• Successful campaigns have a less dense, and wider network. • Highlights the importance of establishing a strong network before launching a campaign.
5	How backers of a campaign become more than customers after funding. Creates the need to measure success after the campaign.	Organisational Image	• The change in sentiment after a campaign was much more complex than expected. • Campaigns with high levels of comments from the public after fundraising have a more negative sentiment, associated with diminishing organisational control.

Combined Contribution

- Crowdfunding success must be measured across the lifecycle of a campaign.
- Crowdfunding must be understood as a social collaboration between the backer and fundraiser, not just a transaction.
- Social media is key to maintaining this social collaboration, which can positively impact different success measures.
- Social media activities that impact crowdfunding success are not only linear, but can also be interdependent.

Figure 1-3: Overview of Research & Contributions

First, this thesis identifies that there are many different ways of measuring success during the lifecycle of a crowdfunding campaign, and is not limited to whether the campaign reached its goal. Next, my research expands our theoretical understanding of crowdfunding and crowdfunding backers, illustrating the social collaboration that

exists. Third, this thesis provides an analysis of the relationship between social media and crowdfunding, identifying factors that impact the success of campaigns. Finally, I highlight some interdependencies that exist in crowdfunding, and the effect these factors have on campaign success. A detailed discussion of these thesis-level contributions is presented in Chapter 6, the conclusion to this thesis. Table 1-2 below shows the analysis techniques used and key data gathered in each chapter, as well as where early versions have been published, and where the extended versions, which are presented in the chapters, are currently under review.

Table 1-2: Chapter Summary of Analysis, and Key Data				
Chapter	**Analysis**	**Key Data**	**Early Version**	**Extended Version**
2	Concept Centric Matrix	Over 100 crowdfunding research papers		Submitted to the Australasian Journal of Information Systems
3	Regression Analysis	Crowdfunding data (Crowdcube) Social media data from Facebook and Twitter Company information from Company's House	Proceedings of the 13th International Conference on Open Collaboration Proceedings of the 25th European Conference on Information Systems	Under review with International Journal of Entrepreneurial Venturing
4	Social Network Analysis	Crowdfunding data (Kickstarter) Social network data from Twitter		Under review with Journal of Decision Systems
5	Analysis of variance	Crowdfunding data (Crowdcube) Social network data from Facebook	Presented at the 5th European Conference on Social Media	Under review with Journal of Theoretical and Applied Electronic Commerce Research

1.5 Summary

My thesis is arranged as a collection of research papers, contributing to a number of different research domains. The process of conducting the research I present in this thesis has allowed me to develop a deep understanding of the social nature of crowdfunding, and the differences between traditional investors and these new crowdfunding investors. I am confident that the content and findings of this thesis make significant contributions to both research and practice. I hope you find my work to be insightful and enjoyable to review.

2 Chapter Two - Determinants of Crowdfunding Success: A Systematic Literature Review

2.1 Abstract

Crowdfunding platforms offer entrepreneurs, companies, and individuals an alternative to traditional financing, such as bank loans, to fund their idea, business, or project. Consequently, the question of what factors can influence the success of a crowdfunding campaign is a very important one. Another question, which is just as important, is what defines a successful crowdfunding campaign, i.e. reaching the target amount, or building a large community of backers. While many studies review crowdfunding literature, to the best of our knowledge, there have not been any that synthesise literature to make sense of how success is actually conceptualized and synthesize the reported factors that aid in achieving that success. To address this, we have gathered crowdfunding literature from journals ranked 3, 4, and 4* in two research disciplines. From this literature, we contribute a comprehensive view, and model, on the dimensions of crowdfunding success and the characteristics of a campaign that predict those dimensions. This study highlights several salient predictors of success across the different types of crowdfunding, as well as proposing a number of potential avenues for future research.

Keywords: Crowdfunding; Success Factors; Literature Review

2.2 Introduction

Crowdfunding originates within the broader concept of crowdsourcing, which uses a multitude of humans to gather ideas, and solutions to solve a wide variety of problems (Bayus, 2013; Howe, 2006; Kleemann, Voß, & Rieder, 2008). Crowdfunding

has evolved to become a valuable alternative to traditional financing, overcoming one of the biggest difficulties that face entrepreneurs and start-ups, namely accessing capital (Cassar, 2004; Cosh, Cumming, & Hughes, 2009). Instead of securing a bank loan or investment from venture capitalists, entrepreneurs can now look to the general public to raise funds for their idea (Mollick, 2014; Schwienbacher & Larralde, 2010).

This method of raising funds from the public has become increasingly more popular, with the rise of platforms such as Indiegogo in 2008 and Kickstarter in 2009 helping to attract mainstream attention. More recently, online crowdfunding has evolved into four main paradigms (Belleflamme et al., 2014; Bradford, 2012; Gleasure & Feller, 2016b). Rewards-based platforms, such as Kickstarter, enables backers to contribute funds to a project, in exchange for a proposed product or service. Crowdcube is one of many equity crowdfunding platforms that helps start-ups raise money by offering everyday investors a stake in the company in return for funds. Debt-based crowdfunding platforms, such as Lending Club, allows backers to lend money to a company or individual, in return for repayment plus interest at an agreed-upon time in the future. Finally, charitable crowdfunding platforms, like GoFundMe, facilitates the donation of funds to individuals or non-profit organizations. While these four paradigms fall under the term of crowdfunding, the motivations of the fundraisers and funders, as well as the predictors of success, are often different (Bretschneider & Leimeister, 2017; Gerber & Hui, 2013).

Recent crowdfunding literature has examined these different types of crowdfunding, exploring if certain characteristics or factors of a campaign can positively impact its

success. Mollick (2014) examines data from Kickstarter, a rewards-based platform, showing that success is driven by personal networks, project quality, and geography. Lukkarinen et al. (2016) finds that investment in equity crowdfunding campaigns is related to pre-selected campaign characteristics. Determinants of success in debt-based crowdfunding are also seen to be driven by pre-determined factors, such as credit grade and interest rate (Cai et al., 2016; Feller, Gleasure, & Treacy, 2017). Gleasure and Feller (2016a) show that success in charitable crowdfunding is driven by campaign characteristics for organizations, but for individuals, it is more influenced by the interaction between funder and fundraiser.

For many entrepreneurs, companies, and individuals that use crowdfunding platforms to fund their venture or cause, raising funds and reaching their goal is typically the most important aspect of the campaign (Schwienbacher & Larralde, 2010). However, there have been many examples of crowdfunding campaigns that have been financially successful in terms of raising money but have eventually failed. For example, in 2015 Doug Monahan created a campaign on Indiegogo hoping to raise money for a Wi-Fi enabled, battery backpack. The campaign was considered a success, with ‘’ raising over $700,000 from more than 4,000 backers. However, since reaching its goal, the backpack has yet to be delivered to backers, and according to the Federal Trade Commission, much of the funds raised were used for personal use, such as purchasing bitcoin and paying off personal credit cards ("Federal Trade Commission v. iBackpack of Texas, LLC, and Douglas Monahan," 2019). Another example of a crowdfunding campaign that raised the funds required, but ultimately failed can be seen with Rebus, a claims management group. They raised over £800,000 from more than 100 investors through an equity crowdfunding campaign,

only to go into administration less than a year later. For this reason, fundraisers should not only focus on the financial aspects of a campaign. Fundraisers should also be motivated to raise and expand awareness of their work, and form new connections (Belleflamme et al., 2014; Schwienbacher & Larralde, 2010). While some campaigns may not reach their goal, success can also be measured in terms of gaining approval for their idea or product and acquiring new followers or customers (Gerber & Hui, 2013).

While there have been many studies that review the literature around crowdfunding (c.f. Bouncken, Komorek, & Kraus, 2015; Gleasure & Feller, 2016b; Mochkabadi & Volkmann, 2018; Moritz & Block, 2016), to the best of our knowledge, there have not been any that synthesise literature to make sense of how success is actually conceptualized and synthesize the reported factors that aid in achieving that success. Thus, this study reviews crowdfunding literature to *synthesize the dimensions of crowdfunding success and the characteristics of a campaign that predicts those dimensions.* First, we articulate how the literature review was performed. After this, we characterize the different reported dimensions of crowdfunding success, as well as the reported factors that predicted different forms of success, both positively and negatively. Finally, we discuss the implications this study has for theory and practice.

2.3 Gathering Literature

The literature review looked for published articles, at the time of the search (25/03/2019), in journals ranked 3, 4, and 4* in two research disciplines; Information Management (IM), and Entrepreneurship & Small Business Management (ESBM). These journals were chosen because they generally have a high impact factor, and

publish well-executed research papers that are highly regarded, and highly referenced. Table 2-1 shows a breakdown of the journals searched, their Academic Journal Guide (AJG) ranking, and the number of papers found. We used three databases to conduct our search; Google Scholar, Web of Science, and the AIS Electronic Library.

Table 2-1: Journals Searched			
Discipline	**Journal**	**AJG Ranking**	**# of Papers**
IM	Information Systems Research	4*	3
IM	MIS Quarterly	4*	2
IM	Journal of Management Information Systems	4	4
IM	Journal of the Association for Information Systems	4	1
IM	Computers in Human Behavior	3	3
IM	Decision Support Systems	3	7
IM	European Journal of Information Systems	3	1
IM	Expert Systems with Applications	3	0
IM	Government Information Quarterly	3	1
IM	Information and Management	3	6
IM	Information and Organization	3	1
IM	Information Society	3	0
IM	Information Systems Frontiers	3	2
IM	Information Systems Journal	3	3
IM	Information Technology and People	3	1
IM	International Journal of Electronic Commerce	3	2
IM	International Journal of Human-Computer Studies	3	0
IM	Journal of Computer Mediated Communication	3	1
IM	Journal of Information Technology	3	3
IM	Journal of Strategic Information Systems	3	3
IM	Journal of the Association for Information Science and Technology (JASIST)	3	0
ESBM	Entrepreneurship, Theory and Practice	4	14
ESBM	Journal of Business Venturing	4	16
ESBM	Strategic Entrepreneurship Journal	4	1
ESBM	Entrepreneurship and Regional Development	3	2
ESBM	Family Business Review	3	0
ESBM	International Small Business Journal	3	2
ESBM	Journal of Small Business Management	3	2
ESBM	Small Business Economics	3	17
Total			98
Papers found in 'Backward Search'			10
Total			**108**

A keyword search queried these databases for specific words or phrases. In total, 5 keywords were identified from previous research in the domain, and used for our search (1: Crowdfunding; 2: Crowdfund, Crowd-fund; 3: Crowdfunded, Crowd-

funded; 4: Crowdinvesting, Crowd-investing; 5: Peer to peer lending, Peer-to-peer lending). We searched for articles that included any of these keywords in the title of the paper.

The initial search returned 98 papers; 44 papers from the IS discipline, and 54 from ESBM. From this, we performed 'backward searching', where we reviewed literature referenced in the articles found in the keyword search (Levy & Ellis, 2006; Webster & Watson, 2002). From this, we identified 10 more research papers that were heavily cited, providing us with 108 research papers to analyse for determinants of crowdfunding success.

From here, we needed to refine and identify research articles that identify determinants of crowdfunding success. The 108 research papers that were identified were organised in an evolving concept-centric matrix (Webster & Watson, 2002). This method was employed as it provides a structure to the literature, and helps in clarifying and discussing the concepts found. Initially beginning with an author-centric matrix, analysing each article and breaking it down features such as; type of crowdfunding analysed, data gathering and analysis technique, positive and negative factors of success, and measure of success. From here, we looked further into the factors of success and measures of success, creating two concept-matrices. This allowed us to isolate these factors of success and success measures examined in the literature, and group together the papers that looked at the same concepts.

Table 2-2 shows that 11 (10.19%) of the 108 research papers found in the systematic review are non-empirical, with 97 (89.81%) empirical articles. This is a significantly different split to that found by W. Chen and Hirschheim (2004) in their analysis of

overall IS research. Within these empirical research articles, the majority of them (79.38%) were quantitative in nature, using data gathered from places such as; crowdfunding platforms, surveys, and social media. 14 of the 97 empirical papers (14.43%) were qualitative, gathering data from interviews or online communities. There were also 6 papers (6.19%) that used a mix of both quantitative and qualitative data for the analysis.

Table 2-2: Articles by Research Approach.

Article Type	Approach	# of Papers	% of Papers	Example Article
Non Empirical	Grounded Theory	1	0.93%	(Gleasure & Feller, 2016b)
	Theoretical Economics Analysis	5	4.63%	(Belleflamme et al., 2014)
	Theory	1	0.93%	(Agrawal et al., 2014)
	Opinion and Conceptual Introduction	3	2.78%	(Bruton et al., 2015)
	Literature Review	1	0.93%	(Mochkabadi & Volkmann, 2018)
Empirical	Exploratory Research	26	24.07%	(Mollick, 2014)
	Hypothesis Testing	64	59.26%	(Lukkarinen et al., 2016)
	Hermeneutic Approach	1	0.93%	(Choy & Schlagwein, 2016)
	Grounded Theory	3	2.78%	(Gleasure & Feller, 2016c)
	Proposition Testing	2	1.85%	(Ryu & Kim, 2018)
	Design Thinking	1	0.93%	(Lee & Sohn, 2019)

Through continuous iterations, and analysis of the literature, it was found that 60 of the 108 research papers examined and identified at least one factor that influenced the success of a crowdfunding campaign in some way. From this, a two-level model was developed (Figure 2-1). On one side of the model, we found three main

predictors of success; (i) Project Information, (ii) Funding Information, and (iii) Project Discussion. Project Information was broken down into Quantity and Qualities of Project Information. Funding Information was broken into the characteristics of Funding, Fundraiser, and Funder. Finally, Project Discussion was separated into Within-Platform Activity and Outside-Platform Activity. On the other side of the model, we conceptualised crowdfunding success into three types of success; (i) Fundraising, (ii) Community-Building, and (iii) Post-Fundraising.

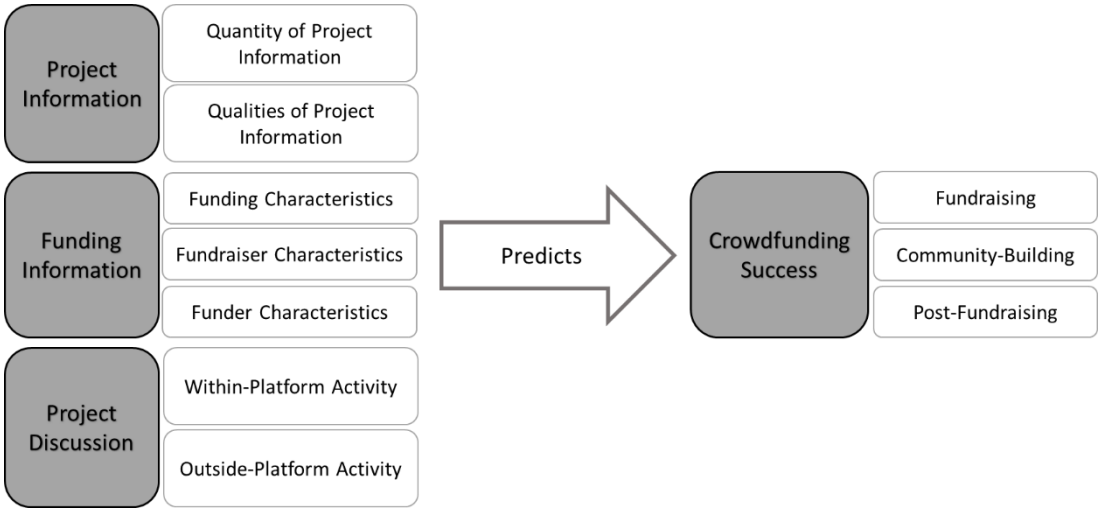


Figure 2-1: Model Showing Predictors of Success and How Success is measured

2.4 Conceptualising Crowdfunding Success

The main goal of any crowdfunding campaign is typically to raise money and reach its funding target. The majority of crowdfunding research that examines determinants of crowdfunding success measures this success through the amount of funds raised (c.f. Gleasure & Feller, 2016a), and whether or not the campaign reached its target (c.f. Mollick, 2014). However, as mentioned earlier, there have been many crowdfunding campaigns that have raised much more than their target goal and ultimately failed. For example, the Zano Drone Kickstarter campaign, with a target of £125,00, went on to raise over £2 million, but ultimately failed less than a

year after the campaign launched, delivering only 4 of 15,000 orders. While fundraising may be the primary goal, fundraisers often have other goals and motivations (Belleflamme et al., 2014; Gerber & Hui, 2013). For example, the number of backers a campaign is able to attract can demonstrate demand for a proposed product or idea. This can be seen from the case of Pebble Smartwatch, which launched three separate Kickstarter campaigns, raising over $10 million from nearly 70,000 backers in 2012, $20 million from nearly 80,000 backers in 2015, and a further $12 million from over 65,000 backers in 2016. The amount of consumers backing these campaigns shows the significant demand there was for a smartwatch. Conversely, entrepreneurs that cannot demonstrate demand, through the number of backers they attract, may be able to "fail-quickly", sparing the need for further investment (Mollick, 2014). Therefore, the success of a campaign should not only be measured through financial indicators, but through other measures such as the number of backers a campaign receives, or how successful the campaign was in terms of delivering after the fundraise.

In the following section, we outline all of the measures off success found in the literature and categorise them into 3 distinct types of success. First, 'Fundraising' encompasses measures of success that focuses on how well a campaign is doing in terms of raising funds and reaching their goal. Next, 'Community-Building' incorporates measures of success that analyse the number and type of backers a campaign attracts. Finally, 'Post-Fundraising' explores research papers that look at the success of a crowdfunding campaign after completion and the impact it has had on the entrepreneur or business. From the 60 research articles that identify determinants of crowdfunding success, 21 different measures were used to evaluate

how successful certain aspects of a crowdfunding campaign was. As some papers used more than one measure of success, we found that these 21 crowdfunding success measures were used 84 times across the 60 papers. The majority of these papers analysed crowdfunding platform data using regression analysis. Typically, the dependent variable in these regressions were used to measure the success of the campaign.

2.4.1 Fundraising

Table 2-3: Financial Measures of Success.

Measure of Success	# of Times Used	Source
Funding reached (binary)	26	(Allison et al., 2017; Anglin, Short, et al., 2018; Anglin, Wolfe, et al., 2018; Bollaert, Leboeuf, & Schwienbacher, 2017; Buttice, Colombo, & Wright, 2017; Cai et al., 2016; Colombo et al., 2015; Courtney, Dutta, & Li, 2017; Du, Li, & Wang, 2018; Gafni, Marom, & Sade, 2017; Han et al., 2018; Jian & Usher, 2014; M. A. Johnson, Stevenson, & Letwin, 2018; Josefy et al., 2017; Kgoroeadira, Burke, & van Stel, 2018; Kleinert, Volkmann, & Grünhagen, 2018; M. Lin, Prabhala, & Viswanathan, 2013; Mollick, 2014; Oo et al., 2018; Parhankangas & Renko, 2017; Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017; Tao, Dong, & Lin, 2017; Vulkan, Åstebro, & Sierra, 2016; J. J. Xu & Chau, 2018; Zhou et al., 2018)
Amount raised	12	(Ahlers et al., 2015; Anglin, Short, et al., 2018; Anglin, Wolfe, et al., 2018; Block, Hornuf, & Moritz, 2018; Bollaert et al., 2017; Gleasure & Feller, 2016a; Hong & Ryu, 2018; M. A. Johnson et al., 2018; Josefy et al., 2017; Kang, Jiang, & Tan, 2017; Lukkarinen et al., 2016; Ryu & Kim, 2018)
Funding rate (raised/target)	8	(Cho & Kim, 2017; Feller et al., 2017; Gafni et al., 2017; Giudici, Guerini, & Rossi-Lamastra, 2018; Hong & Ryu, 2018; Scheaf et al., 2018; Vismara, 2016a; Zheng et al., 2014)
Time to funding	4	(Allison et al., 2015; Galak, Small, & Stephen, 2011; Jancenelle & Javalgi, 2018; Moss et al., 2018)
Average funding amount	4	(Bretschneider & Leimeister, 2017; Chan & Parhankangas, 2017; Kromidha & Robson, 2016; Ryu & Kim, 2018)
Amount invested by backer	3	(Burtch, Ghose, & Wattal, 2016; Davis et al., 2017; Mahmood, Luffarelli, & Mukesh, 2019)
Early backing ($)	2	(Colombo et al., 2015; Vulkan et al., 2016)
Intention to fund	2	(Liang, Wu, & Huang, 2019; Mahmood et al., 2019)
Propensity to fund	1	(Agrawal et al., 2015)
Amount raised (in a day)	1	(J. Zhang & Liu, 2012)
Amount raised (1st day)	1	(J. Zhang & Liu, 2012)
Chance of success	1	(Yuan, Lau, & Xu, 2016)

Measures of success that examined the funds gathered by a campaign were the most widely used throughout the literature (77%). From the research papers, we identified 13 unique measures of success that analysed the funds raised by a crowdfunding campaign (Table 2-3). The most commonly used measure of success examined whether or not a campaign reached its funding goal, 'Funding reached' (c.f. Courtney et al., 2017; Mollick, 2014). This is the most instinctive measure of success, as most crowdfunding platforms, like Kickstarter, use an 'all-or-nothing' model, meaning campaigns only receive the funds when their target is reached (Cumming, Leboeuf, & Schwienbacher, 2015). The next most popular measure, 'Amount raised', looks at the total amount of funding a crowdfunding campaign receives (c.f. Ahlers et al., 2015; Block et al., 2018). For both successful and unsuccessful campaigns, this measure represents the total amount that backers were willing to give to a campaign. A successful campaign is one that reaches its goal, however, crowdfunding campaigns can also raise more than their intended target. For this reason, many researchers use 'Funding rate' as a measure of success, dividing the total raised by the target set (c.f. Giudici et al., 2018; Vismara, 2016a). Another common measure of crowdfunding success is the length of time it takes for a campaign to be fully funded. Our literature review identified 4 papers that examined 'Time to funding', calculating the number of days it took for each campaign to reach their target (c.f. Allison et al., 2015; Moss et al., 2018). This measure can be seen as an indicator of preference, where campaigns that are funded more rapidly are more attractive to backers. Success was also measured in terms of 'Average funding amount', calculated by dividing the total amount of funding received by the total number of backers (c.f. Kromidha & Robson, 2016; Ryu & Kim, 2018). This measure is fully determined by

backers, and allows researchers to estimate the average level of attraction that individual backers might have for a campaign. Other studies used 'Amount invested by backer' as a measure of success, examining the amount of funds invested by an individual backer in a campaign at a given point in time (c.f. Burtch et al., 2016; Davis et al., 2017). Some studies also examined how financially successful crowdfunding campaigns were in the early stages of the campaign. Vulkan et al. (2016) explored what percentage of funding a campaign reached in the first week of the campaign, and Colombo et al. (2015) examined the total amount pledged to a campaign at one-sixth of the way through the duration. Other studies measured success in terms of how likely funders were to back their campaign. 'Intention to fund' was measured by asking potential backers how willing they were to back (in dollars) a particular campaign (Liang et al., 2019; Mahmood et al., 2019). This measure captured the degree to which potential backers were willing to fund. Agrawal et al. (2015) examine a similar measure, 'Propensity to fund', however, instead of surveying potential backers, they employ an economic formula that analyses how much backers are willing to fund based on different elements of the campaign. J. Zhang and Liu (2012) used 2 different financial measures to examine the success of a crowdfunding campaign. These were, 'Amount raised (in a day)', which determines the amount of funding received during a day, and 'Amount raised (1st day)', which measures the funding received by a campaign during the first day of its campaign. Finally, 1 paper was identified that uses machine learning techniques in order to predict fundraising success. Yuan et al. (2016) propose a text analytics methodology for analysing and predicting crowdfunding success, outperforming classical methods in predicting success by an average of 11%.

2.4.2 Community-Building

Table 2-4: Community-based Measures of Success.		
Measures of Success	**# of Times Used**	**Source**
Number of backers	9	(Ahlers et al., 2015; Anglin, Wolfe, et al., 2018; Block et al., 2018; Bollaert et al., 2017; Gafni et al., 2017; Josefy et al., 2017; Kleinert et al., 2018; Lukkarinen et al., 2016; Vismara, 2016a)
Number of backers (in a day)	2	(Kuppuswamy & Bayus, 2017; Wessel, Thies, & Benlian, 2016)
Early backing	2	(Colombo et al., 2015; Vismara, 2016b)
Late backing	1	(Vismara, 2016b)
New backer added (binary)	1	(Kuppuswamy & Bayus, 2018)
Number of backers from a specific country	1	(Burtch, Ghose, & Wattal, 2013a)
Backer satisfaction	1	(Zheng et al., 2017)
Predicted success	1	(Davis et al., 2017)

From the literature, we found that in over 20% of the research papers, success was measured in terms of securing backers and building a community (Table 2-4). These measures are not only critical to a successful campaign, but as many backers can become customers, gaining more backers is indicative of the potential market for the product or service (Belleflamme et al., 2014). Most studies that considered this, used 'Number of backers' to measure the total number of backers that were attracted to a campaign (c.f. Kleinert et al., 2018; Lukkarinen et al., 2016). Regardless of whether or not the campaign reached its goal, this measure indicates the number of individuals who were willing to back the entrepreneur or company. Other papers examined 'Number of backers (in a day)', a count of the number of backers a project receives on a given day (Kuppuswamy & Bayus, 2017; Wessel et al., 2016). As with the measures relating to funding, some papers examine 'Early backing' (Colombo et al., 2015; Vismara, 2016b), looking at how successful campaigns were in the early

stages of the campaign, in terms of the number of backers. Vismara (2016b) also examines 'Late backing', the number of backers that contribute towards the end of the campaign. Another measure, 'New backer added', was a binary variable used by Kuppuswamy and Bayus (2018) to test whether a campaign received a new contribution on a given day. Burtch et al. (2013a) analysed the number of backers in more detail, looking at the 'Number of backers from a specific country'. Finally, Zheng et al. (2017) examined 'Backer satisfaction', asking backers to rate how happy they were with a crowdfunding campaign they contributed to. Davis et al. (2017) focuses on the opinion of funders, by showing them a number of crowdfunding campaigns, asking them how much they would be willing to invest, and whether they believe those crowdfunding campaigns would ultimately succeed or not ('Predicted success').

2.4.3 Post-Fundraising

Table 2-5: Post-fundraising Measures of Success

Measure of Success	# of Times Used	Source
Impact of crowdfunding	1	(Datta et al., 2019)

Only 1 study in the literature analysed success after a crowdfunding campaign, exploring how successful the fundraiser perceived the campaign to be, and the impact it has had. (Table 2-5). Datta et al. (2019) measured the 'Impact of Crowdfunding', by asking successful crowdfunding creators how successful they considered different aspects of their campaign to be. For example, they asked fundraisers how successful they believed the crowdfunding campaign was in terms of meeting goals, increasing awareness about the product, and generating additional revenues.

2.5 Predictors of Success

Through our analysis, 56 papers identified at least one factor that positively influenced the success of a crowdfunding campaign. As well as factors that positively impact a crowdfunding campaign, 31 papers were identified that found at least one factor that negatively impacted crowdfunding success. While many of these negative factors support positive factors identified, we see some that contradict these positive factors. Typically, these factors came from the independent variables used in a regression analysis. These factors also came from interviews and experiments in qualitative research. After identifying all predictors of success in the literature, we were able to classify them into 3 distinct categories; Project Information, Funding Information, and Discussion.

2.5.1 Project Information

Project information refers to the details and attributes of a crowdfunding campaign that need to be conveyed to the crowd, in order for potential funders to make informed decisions. This information disclosure is required to reduce information asymmetries between fundraisers and funders (Ahlers et al., 2015). This information can be provided to potential funders in several different ways, including images, videos, documents, or specific details of the product. While there is a need to convey project information to potential funders, it is not just about the quantity of information provided. Fundraisers also need to carefully manage the way in which information is conveyed to the crowd. For this reason, we have broken 'Project Information' into two categories. 'Quantity of Project Information' looks at the amount and type of information provided to the crowd, and 'Qualities of Project Information' explores the language used to convey this information.

2.5.1.1 Quantity of project information

Table 2-6: Predictors of Success Related to Quantity of Project Information			
Predictor	**Predicts**		**Source**
Visuals			
Video, Images	Fundraising	Funding reaching	(Anglin, Short, et al., 2018; Courtney et al., 2017; Josefy et al., 2017; Mollick, 2014)
		Amount raised	(Anglin, Short, et al., 2018; Gleasure & Feller, 2016a; Josefy et al., 2017)
		Early backing	(Colombo et al., 2015)
		Funding rate	(Scheaf et al., 2018)
	Community	Number of backers	(Josefy et al., 2017; Kuppuswamy & Bayus, 2018)
Provision of Documents			
Providing non-financial and financial documents	Fundraising	Funding reaching	(Han et al., 2018)
		Amount raised	(Ahlers et al., 2015)
	Community	Number of backers	(Lukkarinen et al., 2016) (Ahlers et al., 2015)
Project & Product Description			
Project description (e.g. schedule), Product description (e.g. patent)	Fundraising	Funding reached	(Allison et al., 2017; Gafni et al., 2017; Jian & Usher, 2014; Kleinert et al., 2018; M. Lin et al., 2013; Oo et al., 2018; Piva & Rossi-Lamastra, 2018)
		Amount raised	(Hong & Ryu, 2018; Lukkarinen et al., 2016; Ryu & Kim, 2018)
		Funding rate	(Cho & Kim, 2017; Feller et al., 2017; Gafni et al., 2017; Hong & Ryu, 2018; Scheaf et al., 2018)
		Amount invested by backer	(Davis et al., 2017)
		Intention to fund	(Liang et al., 2019)
	Community	Number of backers	(Gafni et al., 2017; Kleinert et al., 2018; Lukkarinen et al., 2016)
		Backer satisfaction	(Zheng et al., 2017)
		Predicted Success	(Davis et al., 2017)
Time			
	Fundraising	Funding reached	(Mollick, 2014; Skirnevskiy et al., 2017; Tao et al., 2017)

Length of loan repayment, Length of campaign		Funding rate	(Feller et al., 2017; Vismara, 2016a)
	Community	Number of backers	(Lukkarinen et al., 2016; Vismara, 2016a)
		New backer added	(Kuppuswamy & Bayus, 2018)

From the literature, we found that the quantity of project information provided to potential funders can influence how successful the campaign is in many ways (Table 2-6). First, one of the most common ways to convey information to the crowd is through visual cues in the form of videos or images. It is seen that just including a video or image in the campaign description can have a positive effect on whether a campaign reaches its goal (Anglin, Short, et al., 2018; Courtney et al., 2017; Josefy et al., 2017; Mollick, 2014), the total amount raised (Anglin, Short, et al., 2018; Gleasure & Feller, 2016a; Josefy et al., 2017), the amount raised in the early stages (Colombo et al., 2015), and the number of total backers (Josefy et al., 2017; Kuppuswamy & Bayus, 2018). While including a video is vital for any crowdfunding campaign, Scheaf et al. (2018) suggests that it is the quality of the video that makes the campaign more appealing to backers and positively effects the funding rate of the campaign.

Many crowdfunding platforms allow entrepreneurs and companies to provide both financial and non-financial documents to the crowd. Providing these documents to the crowd could be considered a sign of credibility and capability to deliver. Lukkarinen et al. (2016) find that the provision of financial statements is positively associated with the number of investors a campaign receives. Similarly, Han et al. (2018) finds that the number of certificates supplied by the fundraiser, both non-financial and financial, has a positive impact on the campaign reaching its funding goal. This might show that the absence of documents may be considered

unprofessional, and ultimately less attractive to potential backers. Similar to the success factors related to providing documents, Ahlers et al. (2015) showed that campaigns that do not provide a financial forecast are less successful in terms of the total amount raised, and the number of backers they receive.

Next, we identified the characteristics of the campaign description that convey information about the project and the product. Project descriptions are anything portrayed in the description of a campaign that helps backers to better understand the crowdfunding campaign. Cho and Kim (2017) find that providing information about project schedules help campaigns achieve their fundraising goal. Liang et al. (2019) observe that backers are more willing to back projects that provide high-quality information. The literature also shows that a project that has an exit plan (Kleinert et al., 2018) and mentions the entrepreneur (Gafni et al., 2017) are more likely to reach its funding goal and gain more backers. Hong and Ryu (2018) also found that campaigns that indicate the existence of government support are associated with a positive increase in the amount raised and achieving its funding goal. Studies also show that the funding rate of a campaign decreases when they provide information on the purpose of the loan or how funds will be used (Cho & Kim, 2017; Feller et al., 2017). Many crowdfunding campaigns, typically rewards and equity-based, raise money to fund a product. It is seen that some descriptions of the product can impact the success of a crowdfunding campaign. Lukkarinen et al. (2016) finds that business-to-consumer products typically raise more funds and secure a greater number of backers than business-to-business products. It is also seen campaigns are more likely to reach their goal where backers perceive their product to be of higher quality and more innovative (Oo et al., 2018). It has also been found

that products that are high tech products can reduce the chance of a campaign achieving its goal (Piva & Rossi-Lamastra, 2018), and patent ownership negatively effects the campaign's funding rate (Scheaf et al., 2018).

Finally, two studies that examined debt-based crowdfunding found that loans with a longer repayment time were more likely to reach their goal (Tao et al., 2017) and would have a better funding rate (Feller et al., 2017). With regard to the length of time a fundraiser chooses to host a crowdfunding campaign, this has been shown to negatively effect success. Longer campaigns tend to be less successful in terms of reaching their goal (Mollick, 2014; Skirnevskiy et al., 2017), funding rate (Vismara, 2016a), and attracting backers (Kuppuswamy & Bayus, 2018; Lukkarinen et al., 2016; Vismara, 2016a).

2.5.1.2 Qualities of project information

Table 2-7: Predictors of Success Related to Qualities of Project Information			
Predictor	**Predicts**		**Source**
Readability			
Ease of reading (e.g. length of description)	Fundraising	Funding reached	(Han et al., 2018; Mollick, 2014; Parhankangas & Renko, 2017; Zhou et al., 2018)
		Amount raised	(Block et al., 2018; Gleasure & Feller, 2016a)
		Funding rate	(Zheng et al., 2014)
		Time to funding	(Allison et al., 2015)
		Average funding amount	(Chan & Parhankangas, 2017)
		Chance of success	(Yuan et al., 2016)
	Community	Number of backers	(Block et al., 2018)
Psychological Language			
How the project is portrayed to backers	Fundraising	Funding reached	(Allison et al., 2017; Anglin, Short, et al., 2018; Anglin, Wolfe, et al., 2018; Bollaert et al., 2017; Parhankangas & Renko, 2017)
		Amount raised	(Anglin, Short, et al., 2018; Anglin, Wolfe, et al., 2018; Bollaert et al., 2017)
		Time to funding	(Allison et al., 2015; Jancenelle & Javalgi, 2018; Moss et al., 2018)
	Community	Number of backers	(Anglin, Wolfe, et al., 2018; Bollaert et al., 2017)
Sentiment			
Sentiment of comments, Sentiment of project description	Fundraising	Funding reached	(Courtney et al., 2017; Han et al., 2018; J. J. Xu & Chau, 2018; Zhou et al., 2018)
		Amount invested by backer	(Davis et al., 2017)
	Community	Predicted Success	(Davis et al., 2017)

Qualities of project information relates to how fundraisers portray information, and the language they use to convey this information to the crowd (Table 2-7). First, the literature suggests that the readability of project information can influence the success of a crowdfunding campaign. Several studies look at how readable campaign descriptions are, with some showing that longer descriptions are positively related

to campaigns reaching their goal (Zhou et al., 2018), amount raised (Gleasure & Feller, 2016a), and funding rate (Zheng et al., 2014). Block et al. (2018) finds that campaigns that use language that is easier to understand are more likely to raise more money and accumulate more backers. Similarly, Parhankangas and Renko (2017) suggests that campaigns which use more precise and concrete language are more likely to reach their goal. Chan and Parhankangas (2017) find that campaigns that have a more sophisticated description receive a lower average funding amount from backers, and Mollick (2014) shows that campaigns with spelling errors are less likely to hit their funding goal.

Next, our analysis looks at psychological language used by fundraisers. Studies suggest that crowdfunding campaigns can positively increase their time to reach their funding through the use of human-interest (Allison et al., 2015; Jancenelle & Javalgi, 2018) and social language (Moss et al., 2018). Parhankangas and Renko (2017) finds that campaigns that use low psychological distancing language (less first-person words) are more likely to reach their funding. Fundraisers that portray their dream (Allison et al., 2017), and use hopeful and optimistic language (Anglin, Short, et al., 2018) are also more likely to reach their goal. The type of language that campaigns use can also negatively impact success. Bollaert et al. (2017) finds that campaigns that use narcissistic language (high level of first-person pronouns) are less likely to reach their goal. Anglin, Wolfe, et al. (2018) suggests that the relationship between the use of narcissistic language and a campaign reaching its target is inversely U-shaped, proposing that narcissistic rhetoric in the campaign description is positive up to a point, where the effect on campaign success becomes negative.

The sentiment of the language used by both fundraisers and funders can also impact the success of a campaign. It was found that campaigns with a positive project description were more likely to reach their funding goal (Han et al., 2018; Zhou et al., 2018). Studies also show that campaigns with more positive comments and reactions from backers are more attractive to backers (Davis et al., 2017), and will be more successful in terms of reaching their goal (Courtney et al., 2017; J. J. Xu & Chau, 2018).

2.5.2 Funding Information

As well as information conveyed to the crowd from fundraisers, potential funders also consider aspects of the campaign that are not explicitly communicated to them. Campaign characteristics such as the funding target, or the number of backers received early in the campaign, can impact on the overall success of that campaign (Lukkarinen et al., 2016). Additionally, certain characteristics of the fundraiser, such as expertise and education, can also influence a funder's decision to back a campaign or not (Liang et al., 2019). It is also seen that certain traits of the funders, such as where they are physically located, can effect whether they back certain campaigns (Agrawal et al., 2015). For this reason, the following section has been split into 'Funding Characteristics', 'Fundraiser Characteristics', and 'Funder Characteristics'.

2.5.2.1 Funding characteristics

Table 2-8: Predictors of Success Related to Funding Characteristics			
Predictor	**Predicts**		**Source**
Financial			
Financial features of campaign (e.g. target, interest rate)	Fundraising	Funding reached	(Anglin, Short, et al., 2018; Cai et al., 2016; Colombo et al., 2015; Josefy et al., 2017; Mollick, 2014; Skirnevskiy et al., 2017; Tao et al., 2017; Vulkan et al., 2016)
		Amount raised	(Anglin, Short, et al., 2018; Gleasure & Feller, 2016a; Josefy et al., 2017; Lukkarinen et al., 2016)
		Funding rate	(Feller et al., 2017; Giudici et al., 2018; Vismara, 2016a)
		Average funding amount	(Chan & Parhankangas, 2017)
		Early backing	(Vulkan et al., 2016)
	Community	Number of backers	(Ahlers et al., 2015; Josefy et al., 2017; Lukkarinen et al., 2016; Vismara, 2016a)
		Number of backers (in a day)	(Kuppuswamy & Bayus, 2017)
		New backer in a day	(Kuppuswamy & Bayus, 2018)
Early Success			
Number of backers and funds raised early in the campaign	Fundraising	Funding reached	(Colombo et al., 2015; Skirnevskiy et al., 2017; Vulkan et al., 2016)
		Amount raised	(Lukkarinen et al., 2016)
		Late backing	(Vismara, 2016b)
	Community	Number of backers	(Lukkarinen et al., 2016)
Funders			
The number of backers	Fundraising	Funding reached	(Kgoroeadira et al., 2018; Vulkan et al., 2016)
		Funding rate	(Cho & Kim, 2017)
	Community	Number of backers (in a day)	(Kuppuswamy & Bayus, 2017)
Rewards			
The number and type of rewards	Fundraising	Funding reached	(Colombo et al., 2015; Du et al., 2018)
		Amount raised	(Ryu & Kim, 2018)
		Average funding amount	(Ryu & Kim, 2018)
	Community	New backer in a day	(Kuppuswamy & Bayus, 2018)

In the literature, we find several funding characteristics of a campaign that can predict crowdfunding success (Table 2-8). First, we see that financial characteristics of a campaign can impact success in a number of different ways. A higher target can positively effect the total amount raised (Gleasure & Feller, 2016a; Josefy et al., 2017), the number of backers (Josefy et al., 2017; Lukkarinen et al., 2016), as well the average funding amount per backer (Chan & Parhankangas, 2017). While it may be true that campaigns with a higher target will raise more funds, many studies have proven that campaigns with a higher target are less likely in reaching that goal (Anglin, Short, et al., 2018; Colombo et al., 2015; Mollick, 2014; Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017; Vulkan et al., 2016). With some debt-based crowdfunding studies, a higher interest rate is seen to have a positive impact on both reaching the funding goal (Cai et al., 2016), and the funding rate (Feller et al., 2017). However, Tao et al. (2017) finds that the relationship between a campaign reaching its funding goal and interest rate is inversely U-shaped, suggesting that higher interest rates are more positive, up until a certain point. With equity crowdfunding campaigns, studies show that offering more equity in the company negatively effects reaching its goal (Vulkan et al., 2016), its funding rate (Vismara, 2016a), and the number of backers they receive (Ahlers et al., 2015; Vismara, 2016a).

Next, we found that the number of backers and funds raised in the early part of a campaign can positively impact success in terms of a campaign reaching its goal (Colombo et al., 2015; Skirnevskiy et al., 2017; Vulkan et al., 2016), the total amount raised (Lukkarinen et al., 2016), and the total number of backers (Lukkarinen et al., 2016). Vismara (2016b) also finds that the number of backers that contribute early to a campaign will increase the number of backers that contribute late in the

campaign. Kuppuswamy and Bayus (2018) find that the number of backers a campaign receives is U-shaped, suggesting that the majority of backers come in the early or late stage of the campaign.

According to several studies, the number of backers a campaign receives can positively influence the success of a campaign, in terms of reaching its goal (Kgoroeadira et al., 2018; Vulkan et al., 2016), its funding rate (Cho & Kim, 2017), and the number of backers it receives in a given day (Kuppuswamy & Bayus, 2017).

Finally, we identified how characteristics related to campaign rewards can impact success in a number of ways. Kuppuswamy and Bayus (2018) find that as the number of rewards increases, so does the number of new backers a campaign receives in a day. However, Du et al. (2018) finds that the relationship between the number of rewards and a campaign reaching its goal is inversely U-shaped, suggesting that offering more rewards is positive, up until a certain point when it becomes negative. Colombo et al. (2015) finds that the type of reward offered to backers can also impact success, with rewards that give backers a sense of community (e.g. branded outfit, invite to launch party) positively impacts the campaign reaching its funding goal. However, they also find that campaigns that offer rewards that credited backers publicly (e.g. name in public URL) were less likely to reach their goal, and generate backers early in their campaign.

2.5.2.2 Fundraiser characteristics

Table 2-9: Predictors of Success Related to Characteristics of the Fundraiser			
Predictor	**Predicts**		**Source**
Financial			
Financial features of the fundraiser (e.g. credit rating)	Financial	Funding reached	(Cai et al., 2016; Kgoroeadira et al., 2018; Kleinert et al., 2018; M. Lin et al., 2013; Tao et al., 2017)
		Funding rate	(Feller et al., 2017)
		Amount raised (1st day)	(J. Zhang & Liu, 2012)
Past Campaigns			
Previously created and successful campaigns	Financial	Funding reached	(Buttice et al., 2017; Cai et al., 2016; Courtney et al., 2017; Kgoroeadira et al., 2018; Skirnevskiy et al., 2017; Zhou et al., 2018)
		Early backing	(Colombo et al., 2015)
		Amount raised (in a day)	(J. Zhang & Liu, 2012)
	Community	Early backing	(Colombo et al., 2015)
		New backer added	(Kuppuswamy & Bayus, 2018)
Personal & Business			
Personal (e.g. gender, age, education), Business (e.g. number and education of board members)	Financial	Funding reached	(M. A. Johnson et al., 2018; Josefy et al., 2017; Kgoroeadira et al., 2018; Kleinert et al., 2018; M. Lin et al., 2013; Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017; Tao et al., 2017)
		Amount raised	(Ahlers et al., 2015; M. A. Johnson et al., 2018; Josefy et al., 2017)
		Funding rate	(Feller et al., 2017; Giudici et al., 2018; Vismara, 2016a)
		Time to funding	(Jancenelle & Javalgi, 2018)
		Average funding amount	(Chan & Parhankangas, 2017)
		Amount invested by backer	(Mahmood et al., 2019)
		Intention to fund	(Liang et al., 2019; Mahmood et al., 2019)
		Amount raised (1st day)	(Kuppuswamy & Bayus, 2017)

	Community	Number of backers	(Ahlers et al., 2015; Josefy et al., 2017; Kleinert et al., 2018; Vismara, 2016a)
	Post-fundraising	Impact of crowdfunding	(Datta et al., 2019)

Literature suggests that certain characteristics of the fundraiser that creator the crowdfunding campaign can also predict the success of that campaign (Table 2-9). Depending on the type of crowdfunding, the fundraiser can take on different forms. For example, an individual can undertake a rewards-based campaign, while an equity-based campaign is hosted by a company. First, we identified the financial characteristics of the fundraiser that predicts success. In debt-based crowdfunding, it is seen that a higher credit rating (less risky) can positively impact a campaign achieving its goal (Cai et al., 2016; Kgoroeadira et al., 2018; M. Lin et al., 2013; Tao et al., 2017), its funding rate (Feller et al., 2017), and amount raised during its first day (J. Zhang & Liu, 2012). It was also seen that a lower debt-to-income ratio led to an increase in funding rate (Feller et al., 2017), and the amount raised in a given day (J. Zhang & Liu, 2012).

Next, the literature suggested that fundraisers with prior experience and success with crowdfunding campaigns were more likely to succeed in subsequent campaigns. Past crowdfunding success was seen to positively influence a campaign reaching its goal (Buttice et al., 2017; Cai et al., 2016; Courtney et al., 2017; Zhou et al., 2018), and collecting more funds in a given day (J. Zhang & Liu, 2012). It was also seen that fundraisers who have previously backed a crowdfunding campaign will attract early backers to their own campaigns (Colombo et al., 2015). Similarly, findings suggest that previous failures will negatively impact a fundraiser if they run another campaign. Two debt-based studies have shown that campaigns are less likely to be

funded if they have previously been unsuccessful (Cai et al., 2016), or have made late repayments in previous loans (Kgoroeadira et al., 2018).

Finally, we see how personal (individual) and business (company) characteristics of fundraisers can influence the success of a campaign. With regard to personal characteristics, we see that the gender of fundraisers can influence the success of a crowdfunding campaign. Several studies found that female fundraisers were often more successful, in terms of reaching their goal (M. A. Johnson et al., 2018; Josefy et al., 2017), the time it took to reach their target (Jancenelle & Javalgi, 2018), total funds raised (Josefy et al., 2017), and funding rate (Giudici et al., 2018). Similarly, Colombo et al. (2015) suggest that male creators are less likely to reach their goal. Entrepreneurs who have a higher education level were also more likely to reach their funding goal (Kleinert et al., 2018; Piva & Rossi-Lamastra, 2018; Tao et al., 2017). It was also seen that backers were more willing to support fundraisers who had a good reputation and knew their product well (Liang et al., 2019). Next, looking at business characteristics, we see that the number of board members has a positive effect on the campaign's funding rate (Vismara, 2016a), total funds raised (Ahlers et al., 2015), and the number of backers (Ahlers et al., 2015; Vismara, 2016a). For equity crowdfunding, it was also found that companies that completed prior rounds of financing were more likely to reach their goal and receive more backers (Kleinert et al., 2018). Chan and Parhankangas (2017) suggest that on average, backers will give less to companies that are perceived to be radically new, and demonstrate originality in how it works (radical innovativeness).

2.5.2.3 Funder characteristics

Table 2-10: Predictors of* Success *Related to Characteristics of Funders			
Predictor	**Predicts**		**Source**
Geography			
Distance between funder and fundraiser	Financial	Amount raised	(Kang et al., 2017)
		Intention to fund	(Agrawal et al., 2015)
	Community	Number of backers from specific country	(Burtch et al., 2013a)
Funder			
Motivations of funders, Characteristics of funder	Financial	Funding reached	(Mollick, 2014; Oo et al., 2018)
		Amount raised	(Kang et al., 2017)
		Time to funding	(Galak et al., 2011)
		Average funding amount	(Bretschneider & Leimeister, 2017)
		Intention to fund	(Agrawal et al., 2015)
	Community	Number of backers from specific country	(Burtch et al., 2013a)

The literature also showed that characteristics of the funder influenced the success of campaigns (Table 2-10). First, Kang et al. (2017) finds that the total amount of funds raised increases with the total distance between the campaign and its backers. Agrawal et al. (2015) suggests that potential backers who are further away from the campaign, are more likely to fund it as it reaches its goal. Contrary to this, Burtch et al. (2013a) suggests that the distance between funder and fundraiser can negatively influence the number of backers from a specific country, finding that locations closer to the fundraiser will comprise of more backers than countries that are farther away. Burtch et al. (2013a) also suggests that more cultural differences between countries can negatively impact the success of campaigns. Individuals from countries with greater differences to the country of the fundraisers, are less likely to back that campaign.

Next, we see that some personal characteristics of the funder influence the success of campaigns they back. Galak et al. (2011) shows campaigns where funders share

characteristics with the fundraiser (gender, occupation, and first name initial) reach their goal quicker than campaigns that don't share characteristics. The personal motivation of funders was also shown to influence the success of campaigns, with funders contributing more on average to campaigns that they like, and to enhance their personal image (Bretschneider & Leimeister, 2017). Campaigns that fulfil a need in funders will also achieve a higher average funding amount (Bretschneider & Leimeister, 2017), and will be more likely to reach its funding goal (Oo et al., 2018). Bretschneider and Leimeister (2017) also find that campaigns that recognise contributions, in the form of praise or thanks, have a lower average funding amount from backers.

2.5.3 Project Discussion

Another way to reduce information asymmetries in crowdfunding is for fundraisers to communicate their idea, and interact with the crowd (Block et al., 2018). Most crowdfunding platforms allow fundraisers to communicate with the crowd through campaign updates, or by responding to funder questions. This within-platform communication has been shown to increase crowdfunding success (Kuppuswamy & Bayus, 2018; J. J. Xu & Chau, 2018). Fundraisers can also communicate with potential funders outside of the crowdfunding platform, primarily through social media platforms. This use of social media to communicate with the crowd enables fundraisers to create relationships and demonstrate value with potential funders (Datta et al., 2019). Campaign success is increased through large social media followings, as well as reciprocation from the crowd through 'Likes' and 'Shares' (Kromidha & Robson, 2016). The following section has split discussion around a

crowdfunding campaign into 'Within-Platform Activity' and 'Outside-Platform Activity'.

2.5.3.1 Within-platform activity

Table 2-11: Predictors of Success Related to Within-platform Activity			
Predictor	**Predicts**		**Source**
Fundraiser			
Updates from fundraiser, Responses to funders	Fundraising	Funding reached	(Mollick, 2014; J. J. Xu & Chau, 2018)
		Amount raised	(Block et al., 2018)
		Funding rate	(Cho & Kim, 2017)
	Community	Number of backers	(Block et al., 2018)
		Number of backers (in a day)	(Kuppuswamy & Bayus, 2017)
		New backer added	(Kuppuswamy & Bayus, 2018)
Funder			
Comments from funders, Concealing funding information	Fundraising	Funding reached	(J. J. Xu & Chau, 2018)
		Amount raised	(Gleasure & Feller, 2016a)
		Funding rate	(Cho & Kim, 2017)
		Average funding amount	(Kromidha & Robson, 2016)
		Amount invested by backer	(Burtch et al., 2016)
	Community	Early backing	(Vismara, 2016b)
Featured by Platform			
Featured (e.g. staff pick, blog post)	Fundraising	Funding reached	(Anglin, Short, et al., 2018; Mollick, 2014; Skirnevskiy et al., 2017)
		Amount raised	(Anglin, Short, et al., 2018)
	Community	Number of backers (in a day)	(Kuppuswamy & Bayus, 2017)
		New backer added	(Kuppuswamy & Bayus, 2018)

Within-platform activity relates to how fundraisers and funders interact on a crowdfunding platform, and the significance of a campaign being highlighted by a platform (Table 2-11). First, we see that fundraisers who provide updates to backers through the platform have more successful campaigns, in terms of reaching their goal (Mollick, 2014), funds raised (Block et al., 2018), funding rate (Cho & Kim, 2017), and backers accumulated (Block et al., 2018; Kuppuswamy & Bayus, 2017). As well as this,

campaigns that give timely responses to backers with accurate answers, will be more likely to reach their goal (J. J. Xu & Chau, 2018).

Next, we realise how the actions of funders on a crowdfunding platform can also impact the success of a campaign. Studies have shown that campaigns with more comments from potential backers are more have a higher funding rate (Cho & Kim, 2017), and will have a higher average backing (Kromidha & Robson, 2016). However, the number of comments from funders has also been seen to negatively impact the likelihood of a campaign reaching its goal (J. J. Xu & Chau, 2018). Looking into funder comments in more detail, Gleasure and Feller (2016a) examine the dialogue around a number of donation-based campaigns, splitting them into campaigns created by an organization or by an individual. Their findings suggest that donations to organizations are negatively influenced by the number of comments from funders, while donations to individuals are positively impacted the level of dialogue around a campaign. After funders commit money to a campaign, some crowdfunding campaigns allow for funders to conceal their name and how much they backed. Vismara (2016b) finds that campaigns will attract more early backing if funder profiles are public, and Burtch et al. (2016) shows that campaigns in which funders hide their identity have a lower average funding amount than campaigns where funder information is public.

In some crowdfunding platforms, crowdfunding campaigns can be featured, or highlighted, by the platform. For example, with Kickstarter, campaigns can be chosen as a staff pick, or featured on a blog. Findings from several studies show that being featured on a crowdfunding platform can positively impact that campaign reaching

its goal (Anglin, Short, et al., 2018; Mollick, 2014; Skirnevskiy et al., 2017), the total amount of funds raised (Anglin, Short, et al., 2018), and the number of backers it receives in a day (Kuppuswamy & Bayus, 2017).

2.5.3.2 Outside-platform activity

Table 2-12: Predictors of Success Related to Outside-platform Activity

Predictor	Predicts		Source
Fundraiser			
Social media friends, Posts about campaign	Fundraising	Funding reached	(Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017)
		Amount raised	(Lukkarinen et al., 2016)
		Funding rate	(Vismara, 2016a; Zheng et al., 2014)
		Average funding amount	(Kromidha & Robson, 2016)
	Community	Number of backers	(Lukkarinen et al., 2016; Vismara, 2016a)
	Post-Fundraising	Impact of crowdfunding	(Datta et al., 2019)
Funder			
Social media friends, Social media shares	Fundraising	Funding reached	(Skirnevskiy et al., 2017)
		Amount raised	(Kang et al., 2017)
		Average funding amount	(Kromidha & Robson, 2016)
	Community	Number of backers (in a day)	(Kuppuswamy & Bayus, 2017; Wessel et al., 2016)

Table 2-12 shows success factors related to discussion and engagement between fundraisers and funders outside of the crowdfunding platform. Many studies have shown that fundraisers with more social media connections will run a more successful crowdfunding campaign, in term of reaching funding goal (Mollick, 2014; Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017), funding rate (Vismara, 2016a; Zheng et al., 2014), average funding amount (Kromidha & Robson, 2016), and the total number of backers (Vismara, 2016a). As well as this, campaigns that post about their campaign on social media will likely see an increase in the total amount raised and the number of backers (Lukkarinen et al., 2016). Datta et al. (2019) showed that

the strategic use of social media during a crowdfunding campaign positively increased the overall success of the campaign, as well as having a positive impact after the campaign in terms of raising awareness and generating additional profits.

The social media network of funders, and how they act can also impact the success of the campaign they back. Kang et al. (2017) finds that campaigns with funders that have a large social media following will raise more money than those with funders that have fewer social media connections. Social media also allows potential funders to share a crowdfunding campaign, and in doing so can increase the chances of that campaign reaching its goal (Skirnevskiy et al., 2017), and having a higher average funding amount (Kromidha & Robson, 2016). Wessel et al. (2016) explore crowdfunding campaigns that use fake social media information and examines whether this makes a difference to the number of backers they receive. They find that in the short term, fake Facebook 'Likes' leads to an increase in backers, however, in the long term, these fake 'Likes' lead to a negative effect on the number of backers.

2.6 Discussion and Conclusions

The objective of this study was to review crowdfunding literature and synthesize the dimensions of crowdfunding success and the characteristics of a campaign that predicts those dimensions. First, we introduced crowdfunding and its origins. Next, we described our systematic approach to searching academic databases, by first performing a keyword search on a number of journals to find relevant crowdfunding literature in the research domains. Once the literature was gathered and duplicates removed, we began our review of the material and developed a concept-centric

matrix to examine how crowdfunding success is conceptualized and the reported factors that aid in achieving that success (Webster & Watson, 2002).

This study has several contributions, both to research and practice. First, our model conceptualises crowdfunding success, breaking it down into three dimensions of success found in the literature. We find that success is measured through financial indicators, such as reaching the funding goal and amount raised, the number and type of backers a campaign receives, as well as the success of the entrepreneur or company post-fundraising. Our study highlights the varied level of research into these different measures of success. While both fundraising (c.f. Allison et al., 2017; Feller et al., 2017), and community-based (c.f. Ahlers et al., 2015; Kuppuswamy & Bayus, 2017) measures of success receive most of the consideration, this study also shows the importance of measuring the success of crowdfunding campaigns post-fundraising.

Our model also categorises the characteristics of a crowdfunding campaign into three distinct groups, with a number of predictors of campaign success in each one. First, there is Project Information, which explores the quantity and qualities of information portrayed to the crowd. Predictors of success include attaching a video (Colombo et al., 2015), and using language that is not sophisticated (Chan & Parhankangas, 2017). Next, Funding Information looks at the financial characteristics of the campaign, along with the attributes of the fundraiser, and the funders. Here, we found predictors such as the funding target of the campaign (Gleasure & Feller, 2016a), the gender of the fundraiser (Giudici et al., 2018), and the location of the funder (Agrawal et al., 2015). Finally, Project Discussion recognises how fundraisers need to

communicate with the crowd, finding predictors such as providing updates through the crowdfunding platform (Mollick, 2014), as well as posting about the crowdfunding campaign outside the platform on social media (Lukkarinen et al., 2016). While existing research has examined crowdfunding literature for success factors (Moritz & Block, 2016), our analysis categorises these factors, and explicitly states how they effect the success of a crowdfunding campaign.

2.6.1 Implications for Practice

This study identifies the characteristics of a crowdfunding campaign that predicts the different dimensions of success. Several predictors appeared consistently across the different types of crowdfunding. This has significant implications for individuals, entrepreneurs, or companies that are planning on launching a crowdfunding campaign. We see that for rewards-based crowdfunding, a campaign that includes a video and images in the description increases the amount of funds raised, as well as the likelihood of reaching its funding goal (c.f. Courtney et al., 2017). As well as this, entrepreneurs need to realise the impact that the number and type of rewards offered to backers has on the success of the campaign. The relationship between the number of rewards offered and reaching the funding goal is seen to be inversely U-shaped (Du et al., 2018), and backers are more likely to choose rewards that give them a sense of community belonging (Colombo et al., 2015). Rewards-based is also impacted by early capital pledged to a campaign. Entrepreneurs that are preparing to launch a rewards-based campaign need to focus on attracting backers and funds early in the campaign, as campaigns that do this are more likely to reach their target (c.f. Colombo et al., 2015).

With equity crowdfunding, investors pay close attention to certain characteristics of the company, which in turn can predict the success of the campaign. The size of the team involved (Vismara, 2016a), the number of board members (Ahlers et al., 2015), as well as the education and experience of the team (Piva & Rossi-Lamastra, 2018) all influence the overall success of that campaign. Fundraisers can also increase their chances of success by increasing their social capital in the form of LinkedIn connections (c.f. Vismara, 2016a). As with rewards-based, the success of equity crowdfunding campaigns can be increased by attracting investors in the early stages of the campaign (c.f. Vulkan et al., 2016).

Predictors of success in debt-based crowdfunding originate from funding characteristics of the campaign. Campaigns have a higher interest rate, a longer repayment time, and are less risky (lower credit rating) are more likely to be funded by backers (c.f. Feller et al., 2017). These are all features of a campaign that can be controlled by the fundraiser and need to be given careful consideration before launching the campaign. Backers of debt-based campaign also pay careful attention to certain aspects of the creator. A fundraiser that has previous crowdfunding success, and has a lower debt-to-income ratio, is more likely to be funded (J. Zhang & Liu, 2012).

With donation-based crowdfunding, analysis suggests that success is predicted by the qualities of project information, particularly the language used to portray the campaign to the crowd. To increase chances of reaching their target on donation or pro-social lending platforms, individuals should use language that is social (Moss et

al., 2018), human-interest (Allison et al., 2015), and portrays moral foundations such as care and loyalty (Jancenelle & Javalgi, 2018).

2.6.2 Future Research & Limitations

With regard to future research, we believe that this study has highlighted a number of potential avenues for future research. First, of the 60 research papers examined, only 1 of these explored post-fundraising crowdfunding success, looking at how successful the creator perceived the campaign to be, and the impact it had on the company (Datta et al., 2019). As stated previously, many campaigns can ultimately fail even though they reached their funding goal, and attracted a large number of backers. Rewards-based campaigns can fail to deliver on pre-purchased products, debt-based campaigns can default on loans, and companies that successfully raise money through equity crowdfunding can ultimately collapse and fail. For this reason, future research should also focus on post-fundraising success, examining research questions such as, how successful campaigns are in terms of delivering rewards or retaining the backing of the crowd.

This study also highlights outside-platform project discussion as an area with potential for future research. While several studies have examined the effect social media has on crowdfunding campaigns, this has mainly been focused on the number of connections or friends, the fundraiser has (c.f. Mollick, 2014; Vismara, 2016a). The number of connections a fundraiser has on social media does not show how or if the fundraiser is using social media to engage with the crowd to attract backers. Only 2 studies attempted to capture how receptive the crowd on social media were to the crowdfunding campaign, by measuring the number of Facebook ‘Shares’ (Kromidha

& Robson, 2016; Skirnevskiy et al., 2017). Future research should also examine measures such as Facebook 'Likes', while also investigate the effect of other social media, such as Twitter or LinkedIn. As well as this, no studies were found that analyse the actual network of the fundraiser, apart from the number of friends they have. Future research could analyse the connections between the fundraiser and potential backers, examining indicators such as the diameter, density, and reciprocity of the fundraiser's social network.

With regard to the limitations of the study, our analysis looked at research papers from 3, 4, and 4* journals within the disciplines of Information Management, and Entrepreneurship and Small Business Management. These disciplines were chosen initially because they produce highly regarded research in the area of crowdfunding. In future iterations of this study, our search could be opened to other disciplines, such as Finance, or Innovation.

3 Chapter Three - Articulation and Appropriation: Identity and Hedonic Funding in Equity Crowdfunding

3.1 Abstract

Equity crowdfunding platforms are multi-sided platforms (MSPs) that offer start-ups an alternative source of finance by connecting them with large numbers of potential investors. However, the success of these crowdfunding campaigns often depends on other social platforms, leading us to explore how the fundraisers' use of multiple platforms supports different types of funding behaviours, and its impact on the success of equity crowdfunding campaigns. To explain this view of equity crowdfunding, this study uses social identity theory (SIT) to formulate hypotheses that examine how information sharing across different platforms can impact different funding behaviours. This study gathered data from equity crowdfunding campaigns on a UK-based platform, Crowdcube, along with corresponding social media data from Facebook and Twitter. Findings suggest that while within-platform information sharing influences the overall fundraising (utilitarian funding) of a campaign, it is the multi-platform information sharing across social media that allows fundraising to exceed initial targets and tap into different social bonding behaviours (hedonic funding).

Keywords: Equity Crowdfunding; Multi-Sided Platform; Social Identity Theory; Crowdcube; Social Media.

3.2 Introduction

Equity crowdfunding platforms bring together two groups of customers (fundraisers and investors) that generate network effects on each other, i.e. a larger pool of fundraisers increases value for investors and a larger pool of investors increases value

for fundraisers. Hence, we define equity crowdfunding platforms as a multi-sided platform (MSP), as do several previous studies (Belleflamme, Omrani, & Peitz, 2015; Tomczak & Brem, 2013). However, these platforms are different from other MSPs, in that many platforms do not possess large populations of casual, repeat users. Instead, they tend to attract many one-time backers. For example, according to Kickstarter (2018), more than 65% of total backers are not repeat backers. This means that the majority of users on this platform are single, one-time backers, drawn to the platform for a specific project. This abundance of one-off backers requires fundraisers to engage outside the crowdfunding platform, and leverage the power of social media to attract more investors (Gleasure & Morgan, 2018; Lehner, 2013).

This need to complement information sharing within a crowdfunding platform with information on social media suggests different platforms meet different social needs and possibly attract investors with different funding behaviours. For example, an individual browsing Facebook may be more likely to bond with an encountered campaign because of personal or social interests, while an individual browsing an equity crowdfunding platform, such as SeedInvest, Crowdcube, etc., may be more likely to bond with the business potential of a campaign. This differing motivations drive different funding behaviours, e.g. outcome-oriented investors will often focus on supporting projects until they meet set targets, while participation or interaction-driven investors will often back projects regardless (c.f. Agrawal et al., 2015; Burtch, Ghose, & Wattal, 2013b; Crosetto & Regner, 2018; Hornuf & Schwienbacher, 2016a). Thus, it important to understand how information-sharing on different platforms attracts different types of investors and consequently different types of funding behaviours.

These issues present 2 main research question in this study (i) does the fundraisers' use of multiple platforms support different types of funding behaviours (specifically target-related vs. target-unrelated), and (ii) does the use of multiple platforms impact on the success of equity crowdfunding campaigns? First, to set the stage for the research process, we provide a theoretical background of crowdfunding and MSPs. Next, we provide a literature review of crowdfunding and MSPs. Following this, we describe how equity crowdfunding platforms can be described as a multi-sided platform, but challenges the traditional definition. From this, we use SIT as a lens to model different information sharing behaviours as they relate to higher target-related (utilitarian) funding and target-independent (hedonic) funding. Econometric data were gathered to test this model from Crowdcube, a leading equity crowdfunding platform in the UK. Results suggest within-platform information sharing has a positive impact on overall fundraising. However, multi-platform information sharing is the only significant predictor of funding that exceeds some given target, i.e. hedonic funding. This demonstrates the parallel role of complementary social platforms in accommodating varied social bonding and funding behaviours.

3.3 Theoretical Background

3.3.1 Crowdfunding

Acquiring external finance from business angels, venture capitalists or bank loans is one of the biggest difficulties facing start-ups in launching their company (e.g. Cosh et al., 2009). In recent years, many start-ups have stopped relying solely on business angels or banks to fund their venture, and instead are looking to raise money from the general public or 'crowd' (Belleflamme et al., 2014). Raising money from the

public is not a new phenomenon, one of the first examples of crowdfunding via the internet happened in 1997, when the British rock band Marillon raised over $60,000 to fund their US tour (Hemer, 2011). Subsequently, one of the first online crowdfunding platforms, ArtistShare, was launched in 2003 and enabled musicians to seek donations from fans to produce digital recordings (Gomez, 2015). As more platforms were launched, this rewards-based crowdfunding continued to become popular. With the rise of Indiegogo in 2008 and Kickstarter in 2009, crowdfunding attracted mainstream attention. Entrepreneurs, artists, or individuals could raise funds from the general public to develop a product or idea, and in return for their funds, the crowd would receive the product or service when it is developed.

More recently, online crowdfunding has evolved and become more than artists or entrepreneurs financing creative ideas. Start-ups and established companies can now raise money for their business by offering the crowd a chance to purchase a stake, or equity, in the company, just like a venture capitalist would do (Ahlers et al., 2015). These equity crowdfunding platforms have become a viable alternative to venture capitalists and business angels, an alternative validated by major legislative changes such as the Jumpstart Our Businesses (JOBS) Act in the US. The JOBS Act changed investment law so start-ups could be funded by non-accredited investors as well as accredited investors. As 97% of Americans are considered to be non-accredited investors based on their incomes (Albright, Jones, & Wales, 2016; Dakin, 2016), this change has significantly opened up the equity crowdfunding market. However, enthusiasm for equity crowdfunding is not simply about new opportunities for investment. Arguably the more profound and interesting change is the scope to

create a large number of investor-consumers that feel a close bond to the fundraising venture (Ordanini et al., 2011).

Equity crowdfunding represents a longer-term and more uncertain return for investors (Wilson & Testoni, 2014), meaning information needs are likely to be more complex than rewards-based crowdfunding or peer to peer lending. On one hand, equity crowdfunding clearly attracts investors who are seeking a return on investment in the form of future dividends, company sale, or a public offering (Cholakova & Clarysse, 2015). However, this is not a sufficient explanation for the interest in equity crowdfunding. After all, there are still very few examples of investors earning substantial financial returns (Zenefits™ and Camden Town Brewery being the standout exceptions at the point of writing).

3.3.2 Multi-sided Platforms

MPSs are technologies that create value by supporting direct interactions between two or more distinct types of affiliated customers (D. S. Evans, 2003a; Osterwalder & Pigneur, 2010). A platform that serves multiple user groups, such as buyers and sellers, is usually defined as a MSP (D. S. Evans, 2003b). An MSP facilitates the transactions between the constituents that it serves, to the extent that members of one group are more likely to get on board with the MSP when more members of the other group to the same (Hagiu, 2009). There are many well-known examples of MSPs that create value by facilitating this participation of different user groups; Amazon and eBay connect buyers with sellers, Uber connects drivers with passengers, the Apple App Store brings together app developers and smartphone users, and PayPal enables merchants and consumers to interact (Hagiu, 2014).

According to Tan et al. (2015), much of the research into MSPs is focused on platform competition and pricing strategies (c.f. Armstrong, 2006; T. R. Eisenmann, 2006; Rochet & Tirole, 2003). Other research on MSPs looks at areas such as platform envelopment (T. Eisenmann, Parker, & Van Alstyne, 2011; Parker & Van Alstyne, 2005), and antitrust issues and regulations (Boudreau & Hagiu, 2009; D. S. Evans, 2003a).

3.4 Literature Review

3.4.1 Crowdfunding

Crowdfunding originates within the broader concept of crowdsourcing, which involves utilizing a multitude of humans to gather ideas, and solutions to solve a wide variety of problems (Howe, 2006; Kleemann et al., 2008). Online crowdfunding is relatively new, as fast-growing platforms such as Crowdcube, Kickstarter and Indiegogo have provided small to medium businesses with a new way to access capital. According to a number of studies, (Belleflamme et al., 2014; Bradford, 2012; Gleasure & Feller, 2016b) there are four paradigms of crowdfunding. These four categories are Crowd Charity (e.g. GoFundMe), Rewards-based Crowdfunding (e.g. Kickstarter), Debt-based Crowdfunding (e.g. Lending Club), and Equity Crowdfunding (e.g. Crowdcube).

Much of the initial literature surrounding equity crowdfunding is legal analysis addressing regulations and restrictions (Moritz & Block, 2016). The interest in legal analysis around equity crowdfunding is because it involves the sale of a security, meaning it is subject to various regulatory issues (Bradford, 2012). Thus, investors of these equity crowdfunding campaigns are typically investing in companies that are

at a very early stage, and may not have strong revenue streams yet (Vulkan et al., 2016). Investors are asked to back campaigns in return for equity, something that is much less tangible than returns for other types of crowdfunding. Therefore, compared to the other types of crowdfunding, this investor-fundraiser relationship is more long-term and the return on investment is more uncertain. In recent years, research on equity crowdfunding has focused on many other areas (c.f. Piva & Rossi-Lamastra, 2018; Vismara, 2016a). Crowdfunding research has examined topics such as the motivations of investors and fundraisers for participating (Gerber & Hui, 2013; Liang et al., 2019), and gender-related funding behaviours (M. A. Johnson et al., 2018; Mohammadi & Shafi, 2018). Our study and hypotheses closely relates to other research that has looked at the effectiveness of signals in crowdfunding (Ahlers et al., 2015; Courtney et al., 2017), and the importance of social media during a crowdfunding campaign (Kromidha & Robson, 2016; Moisseyev, 2013).

3.4.2 Equity Crowdfunding as a Multi-sided Platform

Equity crowdfunding platforms can be seen as MSPs (Belleflamme & Lambert, 2014; Giudici et al., 2012), as they allow direct interaction between two distinct groups of customers; entrepreneurs (fundraiser) who are looking for funds, and contributors (investors) who are willing to fund innovative projects. Fundraisers may be able to interact with investors by their own means, but equity crowdfunding platforms enable this interaction with a higher chance of success, and at a lower cost. With MSPs, there must also be distinct network effects among the various customer groups that the MSP brings together. This distinct network effect is how each side derives positive externalities from the participation of the respective other group (Parker & Van Alstyne, 2005; Rysman, 2009). For example, sellers on Amazon or eBay

gain more value from the platform when there are more buyers, and vice versa. Equity crowdfunding platforms also exhibit these positive network effects between investors and fundraisers (Belleflamme et al., 2015). Investors prefer platforms with a large number of fundraisers, as it would produce a wider set of campaigns to choose from, while fundraisers choose platforms with a large number of investors, as this increases the chances of reaching their goal (Belleflamme & Lambert, 2014). Another aspect of MSPs is asymmetric prices to account for distinct demand elasticities on each side (Rochet & Tirole, 2003). Equity crowdfunding platforms allow for this by charging the side that is raising funds (fundraisers), while investors are exempt from service/transaction fees.

Clearly, crowdfunding platforms can be defined as MSPs, but they tend to challenge the definition when compared to other MSPs. Unlike platforms such as Amazon or Airbnb, investors on crowdfunding platforms are less infrequent, with little support for causal or serendipitous participation. Thus, there is a recognised need for fundraisers to engage with potential investors outside of the crowdfunding platform (Gleasure & Morgan, 2018; Wessel et al., 2016; Young, 2012). Specifically, most investors encounter a campaign from other sites on the web, most often social media sites (Wessel et al., 2016). This allows fundraisers need to extend awareness of their project into environments where crowdfunding is not the main focus. These environments allow groups to form around specific interests and values (Gangadharbatla, 2008; Laroche et al., 2012; Tardini & Cantoni, 2005), and it is these interests that 'anchor' suitable groups to crowdfunding projects (Gleasure & Feller, 2016c). To explain this multi-platform bonding better, we use SIT to explain how online social platforms enable different social identities and behaviours.

3.4.3 Equity Crowdfunding and Social Identity Theory

Social Identity Theory was introduced by Henri Tajfel and John Turner in the 1970s and 80s as a means of explaining intergroup behaviour (Tajfel & Turner, 1979). Social identity is a person's sense of 'whom they are', based on the social group to which they belong. SIT suggests a person does not have one 'personal self', but rather multiple selves and identities, each associated with different social groups in which they perform some particular role (Trepte & Krämer, 2007). Individuals perceive others as part of 'in-groups' with which they socially identify, or 'outgroups' with which they do not (McLeod, 2008). Central to this are shared norms and attitudes, which determine how members of an in-group interact (Blumer, 1986; Mead, 1934). SIT has been applied to explain behaviours in several different domains, including why we choose entertainment media in accordance with certain group memberships (Trepte & Krämer, 2007), how we categorise ourselves in our organization context (Hogg & Terry, 2000), and how we make economic decisions that may appear irrational (Akerlof & Kranton, 2000).

Several previous studies have used SIT to explain crowd behaviour and crowdfunding. Research has shown that fundraisers who are able to convey their personality and identity are more likely to succeed (Gerber & Hui, 2013; Thies et al., 2016). This is because investors pay close attention to the project creators' fit with prevailing norms and attitudes, meaning fundraisers have to get their identity across to the investors in order to engage the crowd (Feller et al., 2017). Most importantly for this study, SIT suggests that people will invest more of their personal time and effort to support ideas that resonate with their social identity (Aaker & Akutsu, 2009).

The emergence of social media platforms has added a new dimension to the theory of social identity, as people are given a chance to effectively portray themselves, and connect with likeminded individuals. This behaviour is related to social networking theory, as people will surround themselves with others who share the same characteristics, value and social statuses (Kadushin, 2012). These social media channels have allowed us to maintain separate and distinct parts of our identity within different social circles, and as a result, a huge number of different social platforms have materialised. These different social networks often accommodate different social identities. For example, an individual may convey their family or leisure self on Facebook and their professional self on LinkedIn (Papacharissi, 2009). This suggests and individual encountering a venture on Facebook may be more likely to engage with that project with family or leisure interests in mind, while an individual encountering a venture on an equity crowdfunding platform may be more likely to engage with that project with pragmatic or financial interests in mind. Thus, the utilitarian value of the equity stake is brought into focus for the latter, the nature of which decreases as funding exceeds the amount required by the venture and erodes the stake of the fundraiser. Conversely, the hedonic value of the equity stake, i.e. the value perceived based on investors' own senses, pleasures, feelings, and emotions (Cheng, 2014), is increased as it exceeds its target to become 'viral', due to the greater capacity for discussion and media attention.

This collectively suggests that social media and equity crowdfunding platforms play a complementary role during fundraising. The latter appeals to utilitarian funding by engaging with the investor selves of the crowd. The former appeals to hedonic

funding (overfunding) by engaging with the family and leisure selves of the crowd. This is illustrated in Figure 3-1.

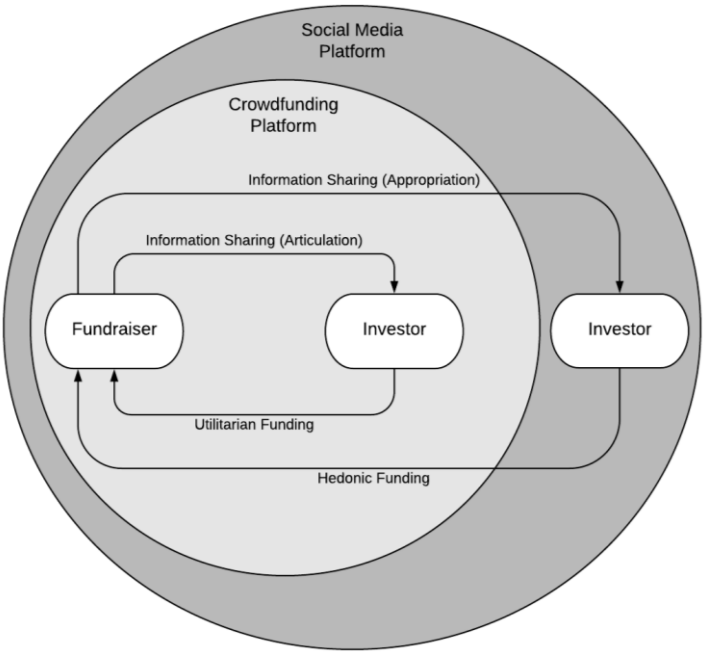


Figure 3-1: Crowdfunding as a Multi-sided Platform.

In the following section, we will use SIT as a lens to formulate hypotheses that examine how information sharing on a crowdfunding platform and social media can impact the success of a crowdfunding campaign. First, we look at the information that is conveyed through the crowdfunding platform. We examine the age of a company, building on SIT research that states how much of the perceived image of a person or company is built up over time through ongoing interaction with various stakeholders (Brewer & Gardner, 1996; Swann, 1987). Next, we look at the number of board members on the board of a company, and how this helps build consumer to customer identification (Bhattacharya & Sen, 2003). After this we look how crowdfunding companies use social media to spread information, extending SIT research that shows how companies use social media to engage with their customers, and communicate their identity to them (Kissel & Büttgen, 2015), and

that highly engaging social media campaigns are likely to generate commitment on part of the consumer (Hoffman & Fodor, 2010).

3.5 Theory Building

Figure 3-2 illustrates five explanatory constructs that have been divided into two classifications; (i) within-platform venture articulation and (ii) multi-platform venture appropriation. Each is hypothesised to appeal to different social identities of investors, the rational utilitarian bonding/funding of professional selves and the personal hedonic funding of family/leisure selves, respectively. These are broken down and explained in the following sections. Note these measures are not intended to be comprehensive for the corresponding constructs. Rather they are used as indicators with which to test larger theorized effects.

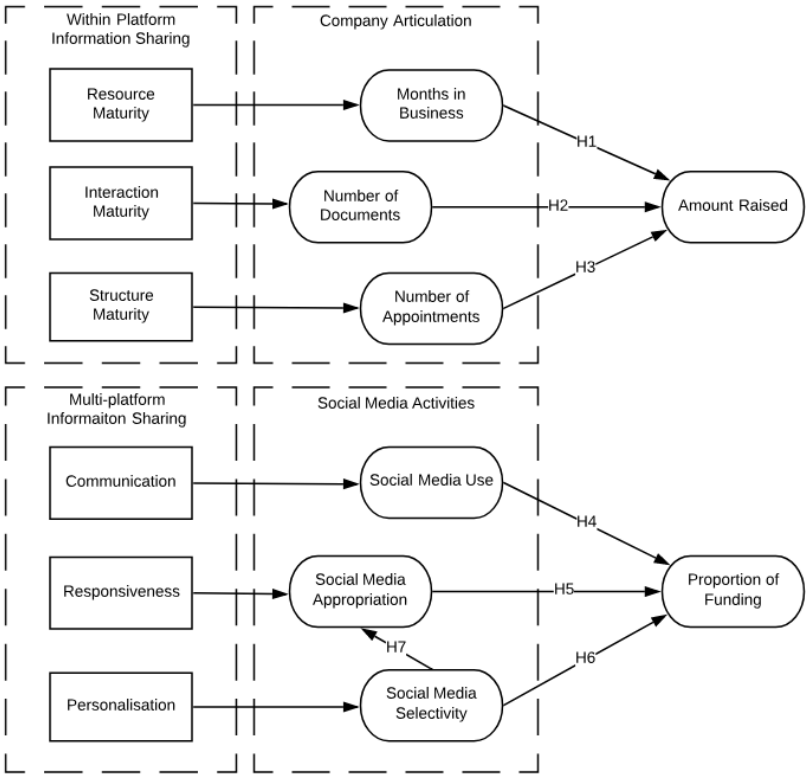


Figure 3-2: Research model Showing Factors that influence Amount Raised and Proportion of Funding in Crowdfunding Campaigns.

3.5.1 Within-platform Information Sharing

To relate to someone or something, we need to first understand it. The more detail a company provides, the easier it will be for the crowd to find elements to which to identify (S. G. Scott & Lane, 2000). Stakeholders often relate to an organizational image, or identity, by using personal characteristics and interpersonal relationships to determine organizational characteristics (Zott & Huy, 2007). Thus, three types of disclosure are likely to articulate a company in a manner that leads to identification with the professional-selves of investors. These three types of disclosure that were identified were the age of a company (resource maturity), the number of documents they provide to the crowd (interaction maturity), and the number of board members (structure maturity). These are not limited to crowdfunding, and would also be taken into account by VCs and business angels if a start-up was looking for funding from traditional sources of financing.

The length of time a company has existed can tell a potential investor more about the company, so helping to professionally identify with different aspects of it. For example, older companies will have more resources available (Ruzzier & Ruzzier, 2015), and will have a much higher chance of survival (Kalleberg & Leicht, 1991). Much of the perceived image of a person or company is built up over time through ongoing interaction with various stakeholders (Brewer & Gardner, 1996; Swann, 1987). These interactions allow a communicator to erode perceptions of harmful information asymmetries, explicitly, by sharing information, and implicitly, by signalling the types of information they believe should be shared. This allows other actors to infer the other types of information the communicator may possess and whether they would be forthcoming with that information as it is required. There are

also other reasons why companies that have been in business for a number of years may attract investment, e.g. because they are perceived as stable or because they are perceived to be making an effort to keep potential customers engaged (Ahlers et al., 2015). Thus, we hypothesise that longer business histories will have a higher total investment.

H1*: The number of months in business will have a positive relationship with a campaign's total amount raised.*

Another way a company can define itself more is to provide the crowd with more information in the form of documents and financial records. Companies can use a crowdfunding platform to communicate with the crowd, telling them more about their company and giving them any updates. Communication in a start-up is important, especially between the company and its investors. Without this honest communication, the start-up can easily lose the confidence of the investors (Beier & Wagner, 2015; Blair, 1998). By regularly sharing updates and all relevant documents, the company will become more defined to potential investors and demonstrate a willingness towards transparency. Thus, as with the length of time in business, we hypothesise that companies who communicate more with potential investors will be defining their business more and more, and so, they will have a higher total investment.

H2*: Companies that provide more documents will have a positive impact on a campaign's total amount raised.*

The number of directors appointed to the board is another way for a company to engage with the professional self-identification of investors. A larger board of

directors may give the crowd the opinion that it is a more established company, and therefore more stable. This perception is not irrational; it has been seen that the number of appointments to the board of directors does have a positive relationship with financial performance (Dalton et al., 1999). While previous studies use the number of directors appointed as a proxy of human capital and signalling theory (c.f. Ahlers et al., 2015), we believe that SIT provides a better way of explaining this consumer to company identification (Bhattacharya & Sen, 2003), and one of these communicators of company identity is the number of directors appointed to the board. Thus, we hypothesise that companies that have more directors appointed to the board will have a higher total investment.

H3*: Higher numbers of appointments will have a positive relationship with a campaign's total amount raised.*

3.5.2 Multi-platform Information Sharing

Companies commonly use social media to engage with their customers and communicate their identity to them (Kissel & Büttgen, 2015; Rapp et al., 2013). We have identified three types of activities on social media that can facilitate multi-platform information sharing and in turn help in conveying the identity of the company across to the crowd. These three activities are; how often do companies broadcast to the crowd (communication), how often do they engage with their audience (responsiveness), and do they target certain social media (personalisation). Highly engaging social media campaigns are likely to generate commitment on part of the consumer, reinforcing loyalty to the brand, and making the customer more likely to commit additional effort to support the brand in the future (Hoffman &

Fodor, 2010). This applies not only to customers but also to other types of external stakeholders (Waters et al., 2009; H. J. Wilson et al., 2011). Therefore, it makes sense why companies use social media to support their crowdfunding campaign, as this provides more opportunity to present different versions of the venture to different groups. This has most commonly been associated with viral marketing (Röthler & Wenzlaff, 2011), which results in advertising to a huge number of potential investors, and fast growth (Richardson & Domingos, 2002). Perhaps unsurprisingly, this relationship between social media appropriation and investment has also been observed in crowdfunding (Everett, 2015; S. Freedman & Jin, 2008; Liu et al., 2015) However, building on earlier discussions of family/leisure identities and social media use, we posit this funding is less likely to focus on specific targets and more likely to focus on the value of participation (Gerber & Hui, 2013; Gleasure & Feller, 2016c). Thus, we hypothesise that companies who are more active on social media will increase hedonic funding, i.e. funding that exceeds set utilitarian targets.

H4*: Higher levels of social media use will have a positive relationship with the proportion of funding for a campaign.*

Social media appropriation refers to the level of engagement the crowd has with a company's social media posts. Measures like the number of Facebook "Likes" and "Shares" on their posts, as well as the number of "Retweets" and "Favourites" on their Tweets would all be examples of social media appropriation. In relation to social identity, social media appropriation measures the responsiveness of the crowd, relative to their family/leisure social identities. This engagement is not simply a function of a company's use of social media. Research suggests companies must carefully manage and evaluate the content and timing of their social media if

individuals are to respond (Rishika et al., 2013). For example, companies that engage with consumers through social media will realise an increase in consumer purchases (Goh, Heng, & Lin, 2013). Research has also found that the fundraiser's ability to demonstrate their identity in larger social networks is associated with the success of a crowdfunding campaign (Kromidha & Robson, 2016). Thus, we hypothesise that appropriation activities are an important complement to companies' social media use if those companies are to appeal to hedonic funding.

H5*: Higher levels of social media appropriation will have a positive relationship with the proportion of funding for a campaign.*

Different social media platforms appeal to different social identities (Gangadharbatla, 2008; Hughes et al., 2012; Laroche et al., 2012). This means users often demonstrate different personalities and information needs according to the platforms they prefer (Hughes et al., 2012). Hence, the selective use of social media can tell a great deal about the extent to which a company is appealing to social motivations (A. M. Kaplan & Haenlein, 2010). Many companies recognise this and often strategically target different platforms depending on their target market (Stelzner, 2014). Hence, some companies and professionals prioritize certain platforms, while others share information more indiscriminately (c.f. Brems et al., 2017; Brennan & Croft, 2012; Gamboa & Gonçalves, 2014; Kim, Kim, & Nam, 2014; Van Dijck, 2013). This suggests, from an equity crowdfunding perspective, that more selective use of social media indicates a company believes their venture has more salient and specific social motivations for potential investors. Thus, we hypothesise that companies that are more selective on social media will be more likely to attract hedonic funding.

H6*: Higher levels of social media selectivity will have a positive relationship with the proportion of funding for a campaign.*

Social media selectivity also has a secondary mediating potential for social media appropriation. A user's preference for choosing a social media, such as Facebook over Twitter, is related to the user's personality, and as a result, companies use different platforms depending on their target market. Increasingly selective and target sharing on social media is often espoused as a powerful means for collecting information/feedback from customers, as local two-way conversations with customers help to develop relationships and build rapport (Enders et al., 2008; A. M. Kaplan & Haenlein, 2010). This allows communication to be tailored towards those the social identities of those using that media, meaning they should be more likely to respond to those communications. It may also implicitly place high importance on some specific group, increasing identity salience by making that group feel more empowered, and will make them feel like they will have a say in ongoing decision making (Clark & Mills, 1979; Gleasure & Feller, 2016c). Thus, we hypothesise that companies that are more selective on social will attract more social media appropriation.

H7*: Higher levels of social media selectivity will have a positive relationship with social media appropriation.*

3.6 Application of Research Method

3.6.1 Sampling

To test the research model, we gathered public data from an established equity crowdfunding platform, namely Crowdcube. Crowdcube is a UK-based online equity crowdfunding website that enables members of the general public to invest in start-

ups, early-stage and growth businesses, alongside professional investors. Launched in February of 2011, Crowdcube has become one of the leading equity crowdfunding models, having raised over £400 million to fund over 600 campaigns. Crowdcube is growing at a rapid rate and is continuing to attract new members, currently with over 500,000 registered investors on the platform (Crowdcube, 2017b).

Crowdcube was selected for two key reasons. First, Crowdcube is an established platform that has been operating for over six years at the time of writing. This means the dynamics of the platform are relatively mature. It also means there have been several high profile successes, creating a level of public awareness (hence, possible investor diversity). Companies like Mondo and goHenry have both had very notably successful campaigns on Crowdcube. Mondo raised £1 million from 1861 investors in just 96 seconds, with each investor giving an average of £542 (Dawson, 2016). GoHenry raised nearly £4 million and did not just benefit from small investors, as a single investor dedicated over £250,000. In July 2015, E-Car Club was the first successful exit from Crowdcube. The company received a significant investment from Europcar, which meant that 63 original investors in E-Car Club via Crowdcube benefited from a multiple return on their investment.

Second, Crowdcube caters to investors of varying experience. Investors on Crowdcube are divided into four groups; 1) Everyday Investors, 2) Advised Clients, 3) Self-Certified Sophisticated, and 4) High Net Worth Investors (Crowdcube, 2014). This means that professional and non-professional investors can give as little as £10 to fund a company. Hence, as a sample of equity crowdfunding, Crowdcube provides a diverse crowd made up of experienced and inexperienced investors.

It should be noted that Crowdcube has two basic models. The first is the debt-based, or bond, model. With this model, you are giving a loan to a company in return for a fixed amount of interest every year. The second model, and the most popular on the platform, is the equity-based model, where investors give money in return for a share in the business. Consistent with the focus of this study, data gathering and analysis focused on campaigns adopting the equity-based model.

We gathered information on 109 crowdfunding campaigns from Crowdcube. All 109 of these campaigns are successful campaigns that had been fully funded by the crowd. This data included information such as Name, Amount Raised, Number of Investors, etc. We also gathered data from Companies House. Companies House is the United Kingdom's registrar of companies and is an executive agency and trading fund of Her Majesty's Government. Social Media data were gathered from Facebook and Twitter for 104 out of the 109 campaigns. 5 campaigns were left out of the study completely as we were not able to collect their social media data. The social media data collected included the number of posts, the number of Facebook 'Likes' and 'Shares', and the number of Twitter 'Retweets' and 'Favourites'. The data gathered was between the company's incorporation date, and the date the company finished funding on Crowdcube.

3.6.2 Measures

In our tests, we used Amount Raised, and Proportion of Funding as dependent variables. Amount Raised was the amount each crowdfunding campaign raised, and the proportion of funding was the total amount raised divided by the target amount of a campaign.

To test H1, we measured the number of months in business. To get this number, we used the date on which the company was incorporated (this was gathered from Companies House), and found the months between that date and the date the crowdfunding campaign finished on the Crowdcube platform. For H2, we gathered the number of documents a company had provided on the Companies House. We also used Companies House to find the number of directors appointed to use for H3.

Social media data were gathered from a campaign's Facebook and Twitter pages. These two social media sites were chosen as they were the most heavily used network by the crowdfunding campaigns. These sites also provide an opportunity for companies to target different audiences. For example, Facebook appeals to an older crowd compared to Twitter (Wolfe, 2018). As with H1, social media data were gathered between two dates; the date of incorporation and the data the crowdfunding campaign ended. For H4, we needed to see how often these campaigns use social media. We measured this as the total number of Facebook posts, plus the total number of Twitter posts. For H5, we needed to measure social media appropriation. This variable is used to show how engaged the crowd is with a company's social media posts. To measure this we added to the number of Facebook 'Likes' and 'Shares' to the number of Twitter 'Favourites' and 'Retweets', and then divided this by the total number of posts. This gave us a result, where the higher the figure, the more engaged the crowd is with their social media posts. To test both H6 and H7, we needed to measure social media selectivity. For this, we needed a measure that would tell us if a campaign was favouring one social media more than another, or if they used both Twitter and Facebook equally. We measured this by subtracting the minimum number of posts (from either Facebook or Twitter), from

the maximum number of posts (from either Twitter or Facebook), and then dividing it by the total number of social media posts. This gave us a measure between 0 and 1, where the closer to number is to 0, the less selective they are with their social media use, while the closer the result is to 1, the more the company is using one social media over another.

3.6.3 Testing

To test our model, we performed two multiple linear regression tests, using Amount Raised, and Proportion of Funding as our dependent variables, respectively. Such regression testing is recognised as a valid approach to simple-model testing (Gefen, Straub, & Boudreau, 2000). It is also popular among econometrics-based system-level studies of crowdfunding, meaning results can be easily compared to other studies.

For the first test, γ_{amount_raised} is the dependant (predicted) variable *Amount Raised*, β_0 is the 'Y-intercept' (where the regression line strikes the Y-axis when the independent variable has a value of 0), and ϵ is the error term. A hierarchical regression is then used to introduce the second set of independent variables relating to social media use.

1) $$\gamma_{amount_raised} = \beta_0 + \beta_{months_in_business} + \beta_{number_of_documents} + \beta_{number_of_appointments} + \epsilon$$

2) $$\gamma_{amount_raised} = \beta_0 + \beta_{months_{in_{business}}} + \beta_{number_{of_{documents}}} + \beta_{number_{of_{appointments}}} + \beta_{social_media_use} + \beta_{social_media_appropriation} + \beta_{social_media_selectivity} + \epsilon$$

The formula is similar for the second test, however, the dependant variable ($\gamma_{proportion_raised}$) is *Proportion of Funding*. A third test adds the *Amount Raised* as a control to enable reliable interpretation of results.

3) $$\gamma_{proportion_raised} = \beta_0 + \beta_{months_in_business} + \beta_{number_of_documents} + \beta_{number_of_appointments} + \beta_{social_media_use} + \beta_{social_media_appropriation} + \beta_{social_media_selectivity} + \beta_{amount_raised} + \epsilon$$

3.6.4 Results

To test our first three hypotheses, we ran all our variables against the dependent variable of Amount Raised, stepping in the social media variables. The results can be seen below in Table 3-1. Overall, the test had an adjusted R^2 of 0.419, with a p-value of less than 0.05. Hypothesis 1 was supported, with a p-value < 0.05, showing that Months in Business is positively and statistically related to Amount Funded. Hypothesis 3 was also supported, with a p-value less than 0.001, meaning the Number of Appointments is also positively and statistically related to the amount of funding of a campaign. However, the Number of Documents had no significant effect, meaning Hypothesis 2 was not supported. We further ran a second model that included each of the social media-related variables. None of these variables are significant, suggesting social media activities do not add significant predictive power for the total amount raised.

Table 3-1: Regression Output with Amount Raised as Dependent Variable.		
Variable	**Beta Model 1**	**Beta Model 2**
Months In Business	.223*	.274*
Number Of Documents	.193 (NS)	.179 (NS)
Number Of Appointments	.393***	.417***
Social Media Usage		-.121 (NS)
Social Media Appropriation		.005 (NS)
Social Media Selectivity		.077 (NS)
Overall	.421*	.419*
**p < 0.05, **p < 0.01, ***p < 0.001*		

For our second test, we used the Proportion of Funding as our dependent variable and ran all variables against it, again stepping in our social media variables and then stepping in Amount Raised as a control variable. From Table 3-2, we can see that the adjusted R^2 for this test was 0.181, with a p-value < 0.01. Hypothesis 5 was supported with this test, with a final beta of 0.204, with a p-value < 0.05, showing that Social Media Appropriation is positively and statistically related to the proportion of funding of a campaign. The test rejected both hypotheses 4 and 6, showing that there is no significance and relationship between Social Media Usage and Proportion of Funding, as well as Social Media Selectivity and Proportion of Funding.

Table 3-2: Regression Output with Proportion of Funding as Dependent Variable			
Variable	**Beta Model 1**	**Beta Model 2**	**Beta Model 3**
Months In Business	.140 (NS)	.086 (NS)	-.029 (NS)
Number Of Documents	.025 (NS)	.021 (NS)	-.054 (NS)
Number Of Appointments	.168 (NS)	.106 (NS)	-.069 (NS)
Social Media Usage		.150 (NS)	.200 (NS)
Social Media Appropriation		.206*	.204*
Social Media Selectivity		.098 (NS)	.066 (NS)
Amount Raised			.418 **
Overall	.048*	.088*	.181**
**p < 0.05, **p < 0.01, ***p < 0.001*			

Interestingly, while Social Media Selectivity did not have a direct impact on the Proportion of Funding, it may have had an indirect impact on it. Hypothesis 7 was supported by our tests, which showed Social Media Selectivity to be positively and statistically related to Social Media Appropriation. We ran a single regression test that had an R^2 of 0.07 ($p < .01$), and an adjusted R^2 of 0.061 ($p < .01$).

3.7 Discussion

The major finding from the study is that, while within-platform information sharing is important for meeting higher targets, it has no significant predictive correlation with funding once that target has been met. Instead, overfunding is only predicted by multi-platform information sharing, as this appeals to different, less business-minded social identities.

In the first section of our model, we focused on the multi-sided nature of an equity crowdfunding platform. This looked at within-platform information sharing and how we first need to understand the identity of a company in order to relate to it. Potential investors can identify with a company based on its general image, or based on specific characteristics. Our first hypothesis explained how the length of time a

company is in business contributes to the identity of a company. Our results supported our hypothesis that the length of time a company is in business will have a positive impact on the funding of a crowdfunding campaign and raising a higher total amount. Our second hypothesis looked at the number of documents a company provides to the crowd. In relation to SIT, we employed the view that providing documents would convey their identity to the crowd, and therefore have a positive impact on the overall funding of a campaign. However, our tests rejected this hypothesis, suggesting the number of documents a company provides does not impact the overall funding of a crowdfunding campaign. While communicating and providing information to the crowd is important to attract investors, this needs to be meaningful communication that the investor can identify with. Our third hypothesis looked at the number of appointments the company had made to the board of directors. In relation to SIT, the number of appointments will contribute to building a company's identity. We extended previous research that suggested the number of members on the board of directors has a positive relationship with financial performance (Dalton et al., 1999). The results supported our hypothesis, showing that a company that has more appointments to the board of directors will have a positive impact on the funding of a campaign. From this first section, we can see how different characteristics of a company that describes a company's identity can lead to an increase in the overall funding of a crowdfunding campaign.

The second section of our model focused on the multi-platform nature of the crowdfunding platform. It looks at how crowdfunding relies on social media platforms to engage with the crowd outside of the crowdfunding platform. Concerning SIT, we wanted to look at how companies are using social media to

engage with their customers, and communicate their identity to them (Kissel & Büttgen, 2015). Our fourth hypothesis examined social media usage, and how posting more on Facebook or Twitter could lead to a successful crowdfunding campaign. However, the result rejected this hypothesis, showing that just posting on social media will not lead overfunding of a campaign. In relation to SIT, companies do need to post on social media to convey their identity, but their posts need to be interesting to the crowd. We then moved on to examine social media appropriation, and how engagement could positively impact the funding of a campaign. The results supported our fifth hypothesis, showing that the number of 'Likes and 'Shares' on Facebook, and the number of 'Favourites' and 'Retweets' on Twitter do have a positive impact on the funding that a crowdfunding campaign receives. This supports previous SIT research that highly engaging social media campaigns are likely to generate commitment on part of the consumer (Hoffman & Fodor, 2010). Hypothesis six examines the role of social media selectivity and its impact on funding. We employed the view that a user's preference for choosing a social media, such as Facebook over Twitter, is related to the user's personality, and as a result, companies use different platforms depending on their target market. While this may be true, our study rejected our hypothesis, showing that in relation to equity crowdfunding, being more active on one social media over another does not have a positive impact on funding. From the section, we see that social media is important for equity crowdfunding campaigns, but it is not enough for campaigns to just post a lot, or only target audiences, their posts need to engage the crowd. By engaging with the crowd, and conveying your identity, this can create a passionate group of investors, who will help a campaign to fund past its target.

Hypothesis seven focused on how social media selectivity could positively impact on social media appropriation. Our results supported this hypothesis by showing that as social media selectivity increased, so did the level of social media appropriation. This builds upon SIT research that giving preference to one group over others will make them feel more empowered (Clark & Mills, 1979). This was the most interesting result out of all of the others, as we saw that social media selectivity did not have a direct impact on funding. Selectivity is important because it has a positive impact on social media appropriation, meaning a subtle and indirect impact on funding. Our control variable, Amount Raised, was shown to have a positive impact on the Proportion of Funding, which supports our seventh hypothesis.

3.7.1 Implications for Research

First, we expand the understanding of MSPs by expanding upon research that defines crowdfunding platforms as MSPs (e.g. Giudici et al., 2012; Tomczak & Brem, 2013). We suggest that equity crowdfunding markets break the traditional MSPs, as they rely heavily on social media platforms to spread information and attract investors. This is due to the fact only a small percentage of investors who back a campaign, have come across that campaign by surfing on the crowdfunding platform (Young, 2012).

Second, this study expands our understanding of equity crowdfunding. Research on these markets has mainly focused on legal literature and regulations (Fink, 2012; Hornuf & Schwienbacher, 2016b). However, we present a data-driven quantitative research paper that looks at how fundraisers can help run a successful equity crowdfunding campaign. We leverage SIT research to build upon previous research that discusses the role of identity in crowdfunding campaigns (Feller et al., 2017;

Kromidha & Robson, 2016), by showing that identity is a considerable motivation for investing in an equity crowdfunding campaign. We present a model that describes how different within-platform and multi-platform information sharing behaviours can be used to convey the fundraiser's identity to the crowd. Using this model we can see how social identity can impact the success of an equity crowdfunding campaign in two ways; it can increase the overall funding of a campaign, and it can also impact the crowdfunding campaign becoming overfunded. We conclude that *overfunding is a function of social media appropriation.*

Third, building upon previous research on hedonic value in rewards-based crowdfunding (Schulz et al., 2015; Zhao & Vinig, 2017), this study recognises hedonic funding in equity crowdfunding. While rewards-based crowdfunding offers tangible, short term rewards, equity crowdfunding represents a long-term commitment with uncertain returns for the investor. Thus, hedonic funding is of particular interest in equity crowdfunding, as it shows how investors are not only funding for the promise of that product, but they are funding the vision of that company or fundraiser. Future research surrounding equity crowdfunding should take into consideration the importance of how identity creates this hedonic value among investors.

Finally, this study recognises the role of social media in equity crowdfunding campaigns, building upon previous studies that focus on how social networks reduce information asymmetries, and thus increase funding probability (e.g. Everett, 2015; S. Freedman & Jin, 2008; Lu et al., 2014). This study highlights the role of social media in equity crowdfunding, showing as crowdfunding campaigns utilise social media to engage with the crowd, they will increase their chance of overfunding their

campaign, and ultimately creating a bond with investors, where investors feel passionate about the company they are backing.

3.7.2 Implications for Practice

This study will have significant implications for fundraisers of equity crowdfunding campaigns. Using our predictive model, they will be able to understand the importance of social identity when funding a campaign. Fundraisers can see how certain aspects of their company (Months in Business, and Number of Directors) can have an impact on reaching their crowdfunding goal. They will also see how important it is to convey their identity and engage with the crowd on social media. Most importantly, this study will highlight to fundraisers the importance of social media, specifically the need for social media appropriation. An engaging social media campaign can help a fundraiser obtain a more passionate group of investors that will lead to their campaign becoming overfunded. Fundraisers need to understand what type of crowd they want supporting their campaign. If they would prefer a crowd that is passionate about the idea and one that will have a strong opinion about the future of the company, then the fundraiser should ensure to be as engaging as possible on social media. Like other models that have been developed (Greenberg et al., 2013; Mitra & Gilbert, 2014), our model will allow fundraisers to design campaigns, that not only maximise funding, but also determines the type of investors that best suits their campaign.

3.7.3 Limitations of Research

As with quantitative and econometrics-based research, there are limitations associated with the data collected. First, the sample is from a single crowdfunding platform based in the UK, and thus the result may not generalize to other platforms

with different target markets and design features. Second, our dataset is only a sample of crowdfunding projects that have succeeded, and have been fully funded. A full dataset of fully funded and failed crowdfunding campaigns would aid us more in investigating the effect of identity on campaigns, however, we did not have access to this.

In the future, we would like to expand on the quantitative analysis presented in this paper. Using the same techniques outlined in this paper we would like to analyse different platforms, such as Seedrs and MicroVentures, across different geographical locations. This would allow us to see if what we found on the Crowdcube platform is consistent across other platforms. To complement this empirical study, a qualitative case study of how investors act in relation to equity crowdfunding could provide further insight into how identity plays a role in the investments they make.

3.8 Summary

This study has framed equity crowdfunding as a multi-sided platform, presenting several contributions to our understanding of multi-sided platforms and their relationship to parallel social media. This study also recognises hedonic funding in equity crowdfunding, and the role of social media in creating this hedonic value; a quality that may be vitally important if crowdfunding campaigns are to go 'viral'. Findings suggest that while within-platform information sharing influences utilitarian funding, it is the multi-platform information sharing across social media that allows fundraising to exceed initial targets and tap into different social bonding behaviours.

4 Chapter Four - How Social Media Interactions Change Across the Stages of a Crowdfunding Campaign

4.1 Abstract

Previous crowdfunding research has demonstrated that interactions with the crowd on social media are vital for entrepreneurs to attract backers. Less clear is how, and why, these interactions change over time as more backers commit to a crowdfunding campaign. This study combines two established theories to understand how interactions between a crowdfunding project and its followers change as the crowdfunding campaign progresses. Social capital theory is used to explain how groups form and expand, and social identity theory shows how new groups become increasingly meaningful for individuals. This study analyses a sample of Kickstarter campaigns, and their activity on Twitter. Findings illustrate important differences among campaigns that successfully reach their targets in the early, middle, or late stages of the fundraising window.

Keywords: Crowdfunding, Social Media, Social Capital, Social Identity, Kickstarter, Twitter.

4.2 Introduction

Early-stage funding is often seen as one of the biggest challenges facing entrepreneurs and start-ups in launching their product or company (Cosh et al., 2009). This has led to the recent growth of crowdfunding, a process that allows groups of individuals to come together to fund creative projects, emerging entrepreneurs, and innovative companies (Solomon, Ma, & Wash, 2015). Crowdfunding began to attract mainstream attention following the launch of online platforms such as Kickstarter and Indiegogo. These platforms allow entrepreneurs,

artists, or anyone with an interesting idea to raise funds from the public. Investors typically include friends and family, lead users, and/or professional investors (Gerber & Hui, 2013). In return for their money, the crowd receives items relating to the project, often an early version of the product or service itself (Mollick, 2014). Kickstarter has enjoyed particular success and growth since its launch in 2009, raising over $4 billion for more than 150,000 campaigns (Kickstarter, 2018). Crowdfunding can ultimately be thought of as a new way of financing that can complement or substitute traditional ways of entrepreneurial finance such as business angels, VC, or banks (Drover, Wood, & Zacharakis, 2017).

Backers may have different motivations for supporting a campaign – some are more interested in receiving a product or service, while some may be more interested in less-tangible outcomes, such as being part of a creative community (Gerber & Hui, 2013; Gleasure & Feller, 2016b; Mollick, 2014). Existing research suggests these backers may join campaigns at different levels of maturity, meaning the timing of contributions varies across different investor groups (Agrawal et al., 2015; Burtch et al., 2013b; Colombo et al., 2015; Crosetto & Regner, 2018; Kuppuswamy & Bayus, 2018). For example, socially-minded backers may prefer to support campaigns that are less likely to reach targets without their help (Ryu & Kim, 2016). Other individuals may join campaigns early because they share offline or geographical interests with the venture (Agrawal et al., 2015; Giudici et al., 2018).

Crowdfunding campaigns attract these different groups of individuals by interacting with the crowd and providing meaningful updates throughout the crowdfunding campaign (Kuppuswamy & Bayus, 2018; Mollick, 2014). Research has shown that

these updates have a significant positive effect on the number of backers of a crowdfunding campaign, and the total amount raised by the campaign (Block et al., 2018). These updates may take place within the crowdfunding platform itself (Steigenberger & Wilhelm, 2018; A. Xu et al., 2014), or through interactions with the crowd via social media (Borst, Moser, & Ferguson, 2018; Nevin et al., 2017b; Wessel et al., 2016). However, what is not clear is how, and why, different types of interactions become common as the crowdfunding campaign progresses through its lifecycle and attracts different types of backers.

The study aims to understand these interactions between a crowdfunding campaign and its followers on social media, and how these interactions change as the campaign progresses. The following section explores the importance of social media when undertaking a crowdfunding campaign, specifically the network of followers that form around a crowdfunding campaign. Next, we look at social capital theory, and social identity theory, and how they have been applied to crowdfunding research in the past. Building on these theories, we present five hypotheses to explore how the stage of a crowdfunding campaign predicts the nature of social media interactions. We then discuss how data were collected for Twitter interactions around a sample of Kickstarter campaigns. Findings are then presented that illustrate contrasting social media dynamics for projects that reach fundraising targets at different stages of the crowdfunding campaign.

4.3 Social Media and Crowdfunding

Unlike traditional forms of fundraising where a small number of investors contribute large amounts of money, crowdfunding campaigns typically gather small

contributions from a large number of backers (Ahlers et al., 2015; Belleflamme, Lambert, & Schwienbacher, 2013). In order to reach these potential backers, entrepreneurs often broadcast their campaign on various social media platforms, such as Twitter or Facebook (Borst et al., 2018). Several studies demonstrate how an active social media presence can have a positive impact on a successful crowdfunding campaign. Giudici, Guerini, and Rossi Lamastra (2013) found that the number of Facebook friends of a campaign initiator has a significant positive effect on the probability of reaching the target fund. Similarly, Lu et al. (2014) found that early promotion of the crowdfunding campaign on social media has a positive impact on funding. These effects cannot be attributed to simple superficial indicators of quality for other backers, e.g. Wessel et al. (2016) looked at 'fake', i.e. artificial signals of support on social media and found these signals offer only minimal benefits in terms of fundraising. Rather it appears social media plays a vital role in assembling the community of backers to support a campaign.

This need to use social media to attract new backers is amplified when you look at the number of repeat backers on crowdfunding platforms. According to Kickstarter (2018), over 67% of total backers are not repeat backers. This means that most users on this platform are single, one-time backers, drawn to the platform for a specific campaign from a social media platform. This abundance of potential one-off backers explains why entrepreneurs must engage outside the crowdfunding platform, and leverage the power of social media to spread information and attract more backers (Gleasure & Morgan, 2018; Lehner, 2013; Young, 2012).

With crowdfunding, backers of a crowdfunding campaign become more than just investors in a crowdfunding campaign. By backing a crowdfunding campaign, an individual assumes a vested interest in the project (Ordanini et al., 2011) and is therefore likely to promote the project among his/her friends and family through social media (Lu et al., 2014). This creates a natural viral quality, as new backers may introduce the campaign to new pockets of friends, family, or colleagues with related interests and values. Previous research has shown how crowdfunding backers base their decisions on information provided by the investment nature of other backers (Hornuf & Schwienbacher, 2018).

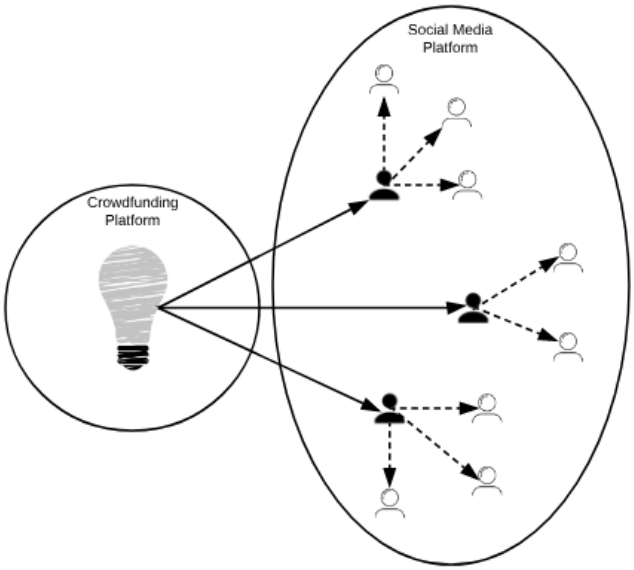


Figure 4-1: Dynamic Community of Communities Formed Around a Crowdfunding Campaign, adapted from Lu et al. (2014).

4.4 Social Capital and Crowdfunding

This study combines two established theories to make sense of how interaction changes during crowdfunding. These two theories are social capital theory (used to explain how groups form and expand) and social identity theory (used to explain how new groups become meaningful for individuals).

The concept of social capital was introduced by Jane Jacobs in 1965, who highlighted the importance of strong personal relationships that develop over time; relationships that provide the basis for trust and collective action in communities (Jacobs, 1965). Since then, other authors have advanced Social Capital Theory, (e.g. Bourdieu, 1986; Coleman, 1988; Portes, 1998) and it has become a multidimensional concept applied in several areas such as supply chain management (Ketchen Jr & Hult, 2007), economics (Knack & Keefer, 1997), crowdsourcing (Peng & Zhang, 2010), and information systems (Nahapiet & Ghoshal, 2000).

Coleman (1988, p.98) defines social capital as a range of entities with two common attributes: "they all consist of some aspect of a social structure, and they facilitate certain actions – whether persons or corporate actors within the structure". According to Coleman, social capital assumes three forms: (i) Obligations and expectations. These are the accumulated exchanges that create trust in the reciprocal reliability of a social network; (ii) Information flow. This is the structure through which information passes in a social network; (iii) Shared norms. These are the unifying behaviours and values that are considered proper/correct, or improper/incorrect in a social network. Coleman suggests that social capital is different from other forms of capital, in that it is both relational and a public good. This means high social turnover can erode social capital, as new relationships must be continuously established. It also means those who generate social capital often enjoy only a limited part of its benefits.

Granovetter (1973) extended social capital theory by looking at the kinds of links involved in the transmission of information, and whether these links were 'strong' or

'weak'. Strong ties exist between a person's closest social connections (e.g. family and friends), meaning these other connections also tend to interact with each, therefore tend to possess strongly overlapping knowledge (J. Scott, 2000). Weak ties bind together more distant parts of a social network, typically connecting individuals with few other connections in common. These weak ties allow information to flow between distant populations and audiences that are not accessible via strong ties. Thus, weak ties are often more valuable from an information perspective, as they provide access to more novel knowledge and lay the foundation for new networks.

Social capital is one of the most used theories when it comes to analysing crowdfunding (McKenny et al., 2017). There is strong evidence for a close relationship between social capital and the success of a crowdfunding campaign (Agrawal, Catalini, & Goldfarb, 2011; Buttice et al., 2017; Mollick, 2014; Skirnevskiy et al., 2017; Vismara, 2016b). Zheng et al. (2014) analysed entrepreneurs' success from a social capital perspective, concluding that social network ties, obligations to fund other entrepreneurs, and shared meaning between sponsors and entrepreneurs all have a significant impact on crowdfunding performance. Colombo et al. (2015) conclude that internal social capital is positively associated with both the amount of early capital and the number of early backers. Gleasure and Morgan (2018) further showed that social capital plays an important role in binding together loosely-connected sub-communities over time.

4.5 Social Identity and Crowdfunding

The manner by which subgroups settle into new social groups is often explained using social identity theory (SIT); a theory introduced by Henri Tajfel and John Turner in the

1970s and 80s (Tajfel & Turner, 1979). Social identity is a person's sense of 'whom they are', based on the social groups to which they belong. SIT suggests a person does not have one 'personal self', but rather multiple selves and identities, each associated with different social groups in which they perform some particular role (Trepte & Krämer, 2007). Individuals perceive others as part of either 'in-groups' with which they personally identify, or 'outgroups' with which they do not (McLeod, 2008). Central to this are shared norms and attitudes, which determine how members of an in-group interact (Blumer, 1986; Mead, 1934). SIT has been applied to explain behaviours in a number of different domains, including why we choose entertainment media in accordance with certain group memberships (Trepte & Krämer, 2007), how we categorize ourselves in our organization context (Hogg & Terry, 2000), and how we make economic decisions that may appear irrational (Akerlof & Kranton, 2000).

Several previous studies have used SIT to explain crowd behaviour and crowdfunding. Research has shown that fundraisers who are able to convey their personality and identity are more likely to succeed (Gerber & Hui, 2013; Thies et al., 2016). This is because investors pay close attention to the campaign creators' fit with prevailing norms and attitudes, meaning fundraisers have to get their identity across to the investors in order to engage the crowd (Feller et al., 2017). Most importantly for this study, SIT suggests that people will invest more of their personal time and effort to support ideas that resonate with their social identity (Aaker & Akutsu, 2009).

4.6 Hypothesis Development

Crowdfunding campaigns can be broken down into three stages; a beginning, a middle, and an end (c.f. Y. Chen et al., 2018; Crosetto & Regner, 2018). These stages present different challenges to entrepreneurs, depending on their level of funding at a given point in time. Some campaigns meet their targets in the beginning or middle stages, often via strong pre-existing networks, at which point fundraising typically plateaus – others rely on surges in fundraising at the end of a campaign to get them over the line (c.f. Agrawal et al., 2015; Burtch, Hong, & Liu, 2018; Crosetto & Regner, 2018). The focus of discussion presumably changes (at least partly) once funding is secured. Hence any comparisons made across campaign stages must also consider the funding trajectory of individual campaigns.

Broadly speaking, weak ties are essential for the discovery of new information and the expansion of social networks. These ties gradually become stronger as networks mature and repeated interactions occur between previously weakly-connected parties (Granovetter, 1974). In crowdfunding, these weak ties are most likely created on social media, as these are the most obvious path for one-off campaigns to link to existing online communities (Thies, Wessel, & Benlian, 2014). Hence social media allows campaign owners and followers to spread information about the crowdfunding project and provide an opportunity for new backers to form preliminary connections to the project. Thus, depending on the maturity of a backer network, the level of discussion on social media will therefore naturally grow over time, as the size of both strongly and weakly connected information network grows.

Hypothesis 1: The stage and funding trajectory of a crowdfunding campaign predicts the level of social media discussion around that campaign.

Existing research has suggested a shared social identity builds up over time between a group's central figures and other members (Haslam, Reicher, & Platow, 2010; Hogg, 2001). Such a shared social identity gradually supersedes the need to negotiate the details of relationships with other specific individuals (Brewer, 1981). Therefore, by shifting from personal relationships to social group-level identification, individuals will become more trusting of the group over time, and more likely to respond to each other directly (Blader & Tyler, 2009; Brewer, 1981; Ellemers, De Gilder, & Haslam, 2004; Ouwerkerk, Ellemers, & De Gilder, 1999). Applied to crowdfunding, findings suggest a shared social identity builds among the crowdfunding campaign and its network of followers, meaning new leaders emerge within the crowd to answer questions (Gleasure, Conboy, & Morgan, 2019; Gleasure & Feller, 2016c; J. S. Hui, Greenberg, & Gerber, 2014). Thus, depending on the maturity of a backer network, we expect responsiveness to become less important over time as backer-to-backer interactions lower the burden on the leader-follower discussion.

Hypothesis 2: The stage and funding trajectory of the crowdfunding campaign predicts entrepreneurs' responsiveness to social media discussion relating to that campaign.

Our third hypothesis is split into four parts, each of which focuses on different aspects of the crowdfunding campaign's social network. First, we look at the *density* of a network, i.e. the mean strength of connections among units in a network (Marsden, 1990, p. 453). This reflects the overall strength of connections between individuals,

as it shows how immersed individuals are among others in the network (Sohn, 2009). This is important, as it is the interactions between a wide range of individuals that establish collective meaning in a group (Granovetter, 1983). Thus, as a group continues to interact, individuals will naturally strengthen initially weak ties (c.f. Blumer, 1986). Therefore, we hypothesize that, depending on the maturity of a backer network, the *density* of a social media discussion in the network will change over time in a crowdfunding campaign.

Hypothesis 3(a): The stage and funding trajectory of a crowdfunding campaign predicts the density of social media interactions.

Another important quality of a social network is the *diameter*, i.e. the largest distance between two nodes, as this gives an indicator of the reach of a network into weakly connected individuals (T.-C. Lin et al., 2016). Previous research has shown the strengthening of weak ties will lead to the increase in total network ties (strong and weak), as new weak ties emerge from strengthening networks (Shrum et al., 2011). This is common in social media, where information often moves 'virally' from one group to another, so increasing the information reach over time (A. M. Kaplan & Haenlein, 2011). Thus, depending on the maturity of a backer network, we expect similar changes in *diameter* to take place for social media discussion around a crowdfunding campaign.

Hypothesis 3(b): The stage and funding trajectory of a crowdfunding campaign predicts the diameter of social media interactions.

Another additional quality of a social network is *reciprocity*, i.e. the likelihood of vertices in a network to be mutually linked (Garlaschelli & Loffredo, 2004). This build-

up of bi-directional exchange provides the basic currency for social capital, as individuals' commitment to the social group grows over time because of their accumulated investment in in-group relationships (Coleman, 1990). Existing research suggests similar patterns among groups of crowdfunding backers, highlighting the role of accumulated *reciprocity*-based social capital inside and outside the crowdfunding platform (Colombo et al., 2015; Zheng et al., 2014). That research typically focuses on the accumulation of *reciprocity* between backers and entrepreneurs. However, there is also evidence to suggest the development of relationships between backers is an important part of community formation (Bretschneider & Leimeister, 2017; Gerber & Hui, 2013; Gleasure et al., 2019; J. S. Hui, Greenberg, et al., 2014). Thus, depending on the maturity of a backer network, we hypothesize that *reciprocity* within the social network will change relative to the stage of a crowdfunding campaign.

Hypothesis 3(c): The stage and funding trajectory of a crowdfunding campaign predicts the reciprocity of social media interactions.

The final network quality we consider is the *clustering* of social media discussion, i.e. the extent to which individuals who interact tend to also share other connections (Watts & Strogatz, 1998). Analysis of social networks shows *clustering* increases over time, as nodes tend to drift towards tightly knit groups with a high density of ties (Holland & Leinhardt, 1971; Watts & Strogatz, 1998). This makes sense from the perspective of social identity, as ongoing interactions allow group identities to become stronger and more nuanced, so advancing shared values and norms, and easing the path for secondary relationships (Sluss & Ashforth, 2007). This also

appears to be the case for crowdfunding, as initially distinct groups gradually merge into a more cohesive community of backers (Agrawal et al., 2015; J. Hui, Greenberg, & Gerber, 2013; Skirnevskiy et al., 2017). Thus, depending on the maturity of a backer network, we expect *clustering* to change relative to the stage of a crowdfunding campaign.

Hypothesis 3(d): The stage and funding trajectory of a crowdfunding campaign predicts the clustering of social media interactions.

The final two hypotheses focus on the content of social media interactions around a crowdfunding campaign. Ongoing interaction leads to a more salient social identity and stronger shared norms (Sluss & Ashforth, 2007). These shared norms become increasingly specific and role-discriminatory, allowing individuals to accurately identify group membership and role-based capabilities in others (Kerr, 1995). This means conversations may become decreasingly accessible to outsiders, as language becomes more specialized and idiosyncratic (Allcott & Gentzkow, 2017; Glaeser & Sunstein, 2009). The use of symbolic cues to build trust in crowdfunding has also been demonstrated, as communities of backers must form functional partial organizations in the absence of defined institutional structures (Feller et al., 2017; K. R. Nielsen, 2018). There have also been suggestions that linguistic cues may hold insights as regards the perception of fraud and deception (Siering, Koch, & Deokar, 2016), though it is not clear the extent to which backers make use of these generalizable cues. In any case, depending on the maturity of a backer network, it appears likely the language around a crowdfunding campaign will experience a change in complexity over time. Thus, we hypothesize:

Hypothesis 4: The stage and funding trajectory of a crowdfunding campaign predicts the complexity of social media interactions.

Our final hypothesis looks at the sentiment of the discussion around a crowdfunding campaign, and how it changes over time. The likely direction of such a change isn't entirely clear. On one hand, social capital suggests that investment of time and effort becomes more valuable as the campaign grows, therefore sentiment should become positive. Further, backers of a crowdfunding campaign may adopt additional responsibility for the welfare of the start-up, as they become mindful of maintaining a positive impression for external onlookers (Bolino, 1999; Lillqvist & Louhiala-Salminen, 2014). However, through social identity, one could argue that as group ownership becomes watered down, a conflict could arise, therefore sentiment could become negative. In any case, depending on the maturity of a backer network, a change in sentiment appears likely. Thus, our final hypothesis:

Hypothesis 5: The stage and funding trajectory of a crowdfunding campaign predicts the sentiment of social media interactions.

4.7 Method

4.7.1 Data Gathering

Data gathering focused on campaigns run on Kickstarter, a market-leading rewards-based crowdfunding platform, and has provided data for prior crowdfunding research (c.f. Chan & Parhankangas, 2017; Courtney et al., 2017). Since its launch in 2009, more than $4 billion has been pledged to Kickstarter campaigns, with over 15 million backers funding more than 150,000 crowdfunding campaigns (Kickstarter, 2018). 35 crowdfunding campaigns were sampled from 2 different categories: 21

from Design; 14 from Technology. Each sampled campaign began funding between the 13th and the 19th of August 2018. Data were collected weekly from Kickstarter and Twitter. Data from Kickstarter included target goal, the amount raised, number of backers, days to go, etc. Data from Twitter were gathered in parallel from each of the sampled campaign's Twitter pages. These data were gathered using a package in R called 'twitteR' (Gentry, 2012). This package provides access to the Twitter API, allowing the gathering of all publicly visible information, including posts made to and from the crowdfunding campaign's Twitter account, as well as posts that explicitly mention the campaign. A total of 12,103 tweets were gathered from the fundraising periods of each campaign. This included tweets from the crowdfunding campaign's Twitter page to the general public, as well as tweets from the general public that related to that crowdfunding campaign's Twitter page.

4.7.2 Data Analysis

Data for each campaign were coded into a dummy variable dividing each campaign into three equal periods: beginning, middle, and end. First, to analyse how social media discussion changes over the course of a crowdfunding campaign, we used the percentage of total tweets sent to or from the campaign's Twitter account in a specific period. To analyse how the responsiveness of the general public changes, we split tweets into those originating from the public and those originating from the crowdfunding campaign itself. For each period, each campaign was assigned a percentage of public tweets to campaign tweets. Next, we looked to analyse the network of followers around a crowdfunding campaign. To do this, we used an R package, called 'igraph' (Csardi & Nepusz, 2006), which allowed us to calculate a value for the *density*, *diameter*, *reciprocity,* and *clustering* of the campaign's social

network at each stage of the campaign. Next, to analyse the complexity of language used in social media discussions, we used an R package, called 'quanteda' (Benoit & Nulty, 2016), which provided several measures for measuring the complexity and readability of the tweets. These measures included the Frequency of Gobbledygook (FOG), Simple Measure of Gobbledygook (SMOG), Flesh-Kincaid (FRE), and the Dale-Chall readability index (DC). Finally, to measure the sentiment of the social media discussion, we used another R package, called 'tidytext' (F. Å. Nielsen, 2011). This package provided access to the AFINN sentiment lexicon, a list of 2,477 English words and phrases with integer sentiment values ranging from +5 for the most positive words to -5 for the most negative. This lexicon has been applied in numerous studies that analyse sentiment on Twitter (Collins, Hasan, & Ukkusuri, 2013; Gamallo & Garcia, 2014; Riloff et al., 2013).

4.8 Findings

Of the 35 crowdfunding campaigns sampled, 17 were successfully funded, 13 failed to reach their goal before their deadline, and 5 campaigns were cancelled. When broken down into the two categories, the Design campaigns did considerably better, with 14 out of 21 campaigns funded, compared to 3 out of 14 Technology campaigns funded. 26 of the 35 campaigns launched between Monday and Wednesday, with 15 of them reaching their goal (57.5%). In comparison, 9 campaigns launched between Thursday and Friday, with only 2 reaching their target (22.22%). Of the 13 campaigns that failed, 1 reached over 90%, 2 achieved between 50% and 60% of their goal, while the remaining 10 campaigns received less than 25% of their goal.

CampaignStage is represented by a dummy variable that splits the tweets for each campaign according to three equal time periods (0 – first third, 1 – second third, 2 – final third). Previous research has shown campaigns follow different patterns when they are funded at different times. A second dummy variable (StageFunded) is therefore also included to indicate when a campaign was funded (0 – Unsuccessful, 1 – Funded in the first third, 2 – Funded in the middle third, 3 – Funded in the final third of the campaign).

Hypothesis 1 states that the stage of a crowdfunding campaign predicts the level of social media discussion around that campaign. To test this, a two-tailed analysis of variance (ANOVA) was run using the number of tweets as a dependent variable. The results showed a significant main effect for CampaignStage, $F(2, 12091) = 594.596$, $p < 0.001$, with most discussion in the first third ($M= 54.11\%$, $SD = 0.25$) and final third of the campaign ($M= 26.32\%$, $SD = 0.19$). No significant main effect was observed for StageFunded. However, a significant interaction effect was observed between CampaignStage and StageFunded, $F(6, 12091) = 165.117$, $p < 0.001$ (Figure 4-2). This interaction suggests campaigns that are unsuccessful in reaching their funding goal exhibit the most substantial decline in discussion in the middle period of fundraising (despite the first and final stages involving most discussion). In contrast, campaigns that reach their funding goal exhibit a relatively consistent level of discussion between the middle and latter stages of the campaign. Thus, Hypothesis 1 is supported.

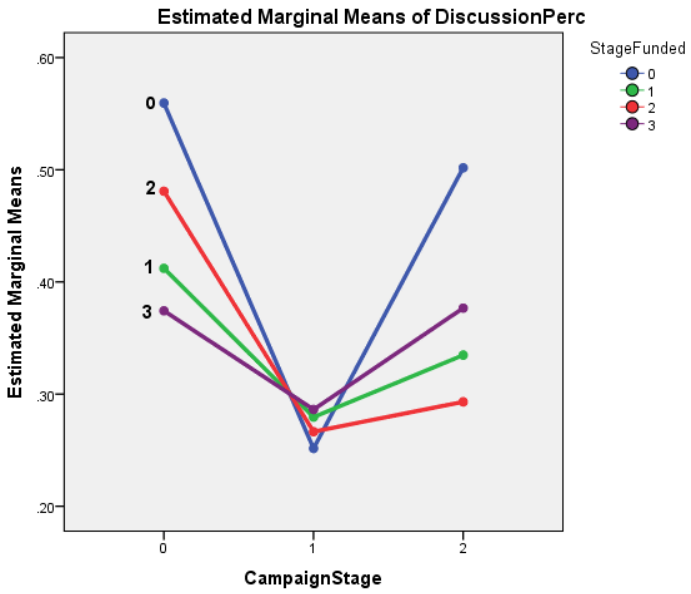


Figure 4-2: Interaction plot between Discussion, CampaignStage, and StageFunded.

The next interaction plot (Figure 4-3) investigates the second hypothesis, that the stage of the crowdfunding campaign predicts entrepreneurs' responsiveness to social media discussion relating to that campaign. To test this, a two-tailed ANOVA was run using the proportion of tweets sent from the public as a dependent variable. The results were significant overall, showing strong explanatory power for the responsiveness of tweets, $R^2 = .497$, $p < .001$. No significant main effect was observed for CampaignStage. However, further investigation showed a significant main effect for Stage Funded, $F(3, 12091) = 3835.428$, $p < 0.001$. This interaction suggests that crowdfunding campaigns are more likely to reach their funding in the early stage of the campaign when much of the discussion is coming from the general public. We also see an uptick in responsiveness for campaigns that were funded in the middle or end of their campaigns. Campaigns that reached their goal in the middle saw an increase in public response in the middle of their campaign, and campaigns funded

towards the end of their campaign also saw an increase in the level of responsiveness in the final stage of their campaign. Thus, Hypothesis 2 is partially supported.

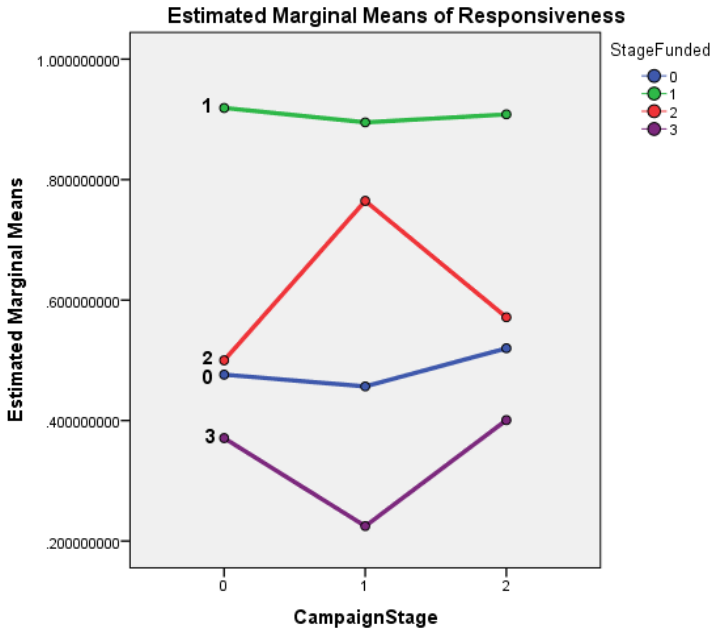


Figure 4-3: Interaction plot between Responsiveness, CampaignStage, and StageFunded.

Hypothesis 3(a) states that the stage of a crowdfunding campaign predicts the *density* of social media discussion around that campaign. Here, the *density* of a social network shows how well connected are all nodes in the network. A *density* closer to 1 suggests a more close-knit community, with quite strong ties but few weak ties, while a *density* closer to 0 suggests a much more disperse conversation with much more weak ties. To test this, a two-tailed ANOVA was run using the *density* of the social network as a dependent variable. This test showed a significant main effect for StageFunded, $F(3, 12091) = 1364.543$, $p < 0.001$ (Figure 4-4), with the *density* of early funded campaigns ($M = 0.013$, $SD = 0.047$) much lower than *density* than all other campaigns ($M = 0.144$, $SD = 0.165$). No significant main effect was observed for CampaignStage. Our findings suggest that the network *density* is predicted by the

stage in which a crowdfunding campaign reaches its funding goal. This indicates that crowdfunding campaigns with a sparse network, full of weak ties, will help that campaign reach its funding goal in the early stage of the campaign. Thus, Hypothesis 3(a) is partially supported.

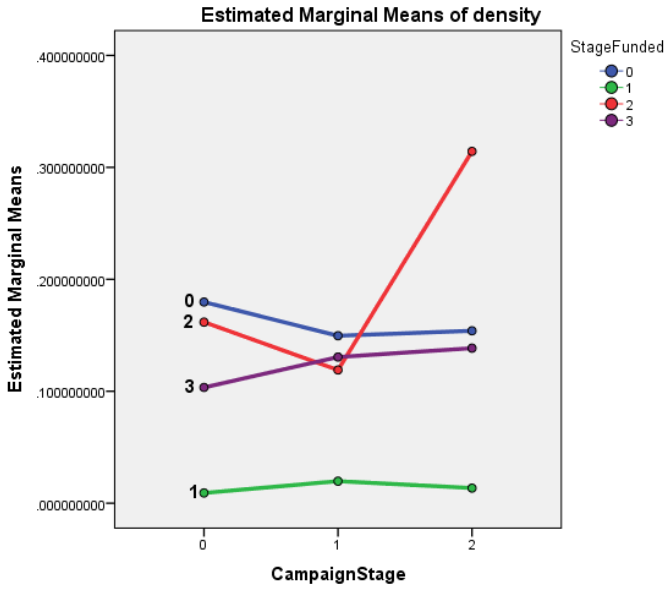


Figure 4-4: Interaction plot between Network Density, CampaignStage, and StageFunded.

Hypothesis 3(b) states that the stage of a crowdfunding campaign predicts the *diameter* of social media discussion around that campaign. The *diameter* of a network is the longest geodesic in the network (Wasserman & Faust, 1994), providing a measure of how dispersed a social network is. To test this, a two-tailed analysis of variance (ANOVA) was run using the *diameter* of the social network as a dependent variable. The results were significant overall, showing strong explanatory power for the *diameter* of the social network, R^2 =.466, $p < 0.001$ (Figure 4-5). This test showed a significant main effect for StageFunded, $F(3, 12091) = 2736.215$, $p < 0.001$, with the *diameter* of early funded campaigns (M = 7.212, SD = 1.93) much larger than the *diameter* of all other campaigns (M =2.69, SD = 1.229). No significant main effect was

observed for CampaignStage. Our findings suggest that the network *diameter* is predicted by the stage in which a crowdfunding campaign reaches its funding goal. Thus, hypothesis 3(b) is partially supported.

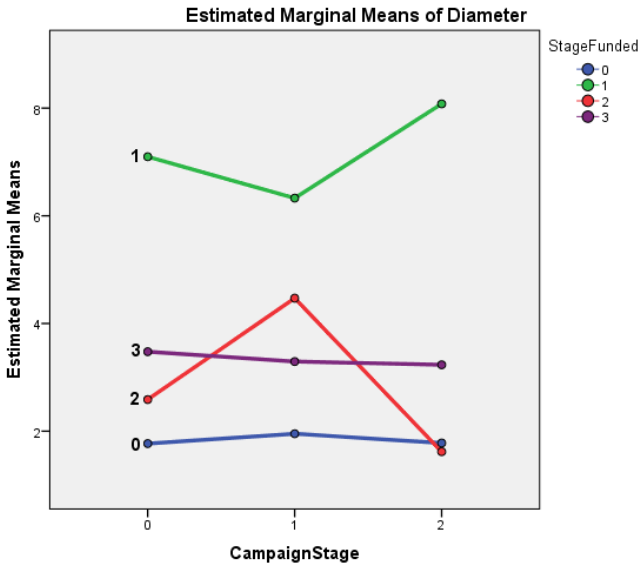


Figure 4-5: Interaction plot between Network Diameter, CampaignStage, and StageFunded.

The results from our analysis did not support hypotheses 3(c) or 3(d), indicating that the stage of a crowdfunding campaign, or the stage which they are funded, does not predict either the *reciprocity* or the *clustering*, of the social media discussion

Hypothesis 4 examines the complexity of the language used, and if this is predicted by the stage of the crowdfunding campaign. As previously discussed, to look at the complexity of language in social media discussion, we looked at four measures: FOG, DC, FRE, and SMOG. Table 4-1 shows a correlation matrix between these measures of complexity, showing a strong and significant relationship between three of them: FOG, FRE, and SMOG. For this reason, we eliminated DC as a means to measure the complexity of language and proceeded with the other measures.

Table 4-1: Correlation Matrix of FOG, DC, FRE, and SMOG.					
		FOG	**DC**	**FRE**	**SMOG**
FOG	Pearson Correlation	1	-0.385**	0.837**	0.792**
	Significance		0.000	0.000	0.000
DC	Pearson Correlation	-0.385**	1	-0.441**	-0.424**
	Significance	0.000		0.000	0.000
FRE	Pearson Correlation	0.837**	-0.441**	1	0.658**
	Significance	0.000	0.000		0.000
SMOG	Pearson Correlation	0.792**	-0.424**	0.658**	1
	Significance	0.000	0.000	0.000	
** Correlation is significant at the 0.01 level (2-tailed)					

An interaction plot was produced for each complexity measure, showing the interaction with the stage of the crowdfunding campaign, and the stage in which it was funded (Figure 4-6). To test this, we performed three two-tailed analysis of variance (ANOVA) tests, using (1) FOG, (2) FRE, and (3) SMOG as the dependent variables. No significant main effect was found for CampaignStage. However, a significant main effect was found for StageFunded: (1) FOG, $F(3, 11540) = 32.028$, $p < 0.001$ (2) FRE, $F(3, 11540) = 31.639$, $p < 0.001$, (3) SMOG, $F(3, 11540) = 27.005$, $p < 0.001$. Our results indicate that campaigns that were funded early in the campaign consistently used language that was not complex (Table 4-2). Thus, hypothesis 4 is partially supported.

Table 4-2. Comparison of Complexity Measures.						
	Funded Early			**Funded Middle/Late & Unsuccessful**		
	FOG	**FRE**	**SMOG**	**FOG**	**FRE**	**SMOG**
Mean	6.66	4.142	6.199	8.729	5.666	7.173
Standard Deviation	5.318	4.374	3.163	5.371	4.304	3.697

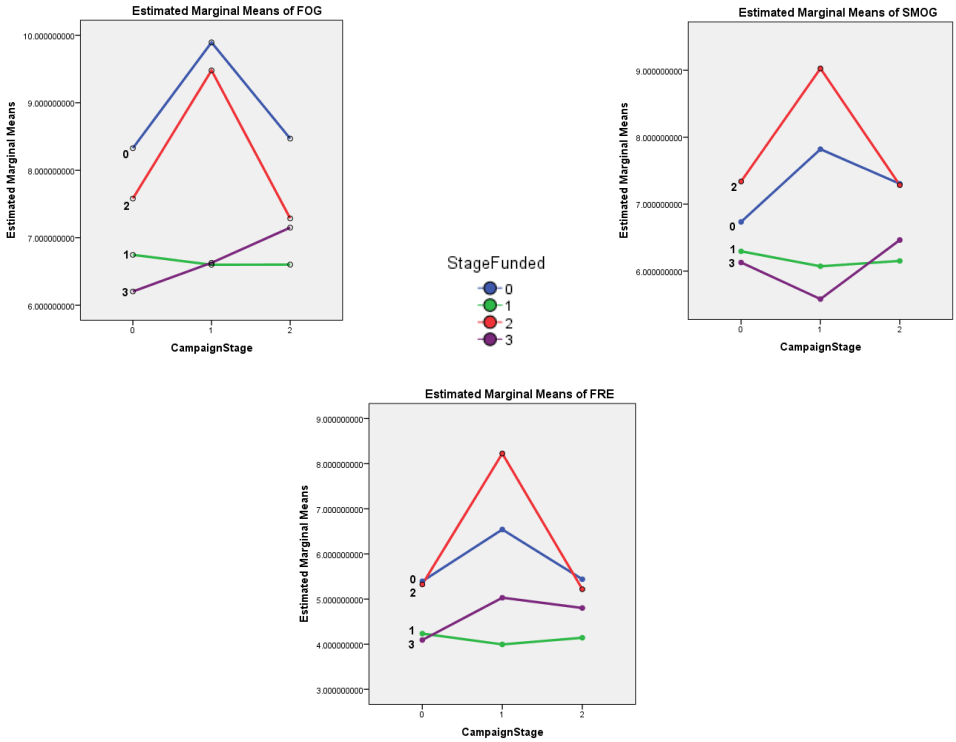


Figure 4-6. Interaction plots between Complexity Measures, CampaignStage, and StageFunded.

Results from our analysis rejected hypothesis 5, showing that now main effect between the dependent variable sentiment, and CampaignStage or StageFunded.

4.9 Discussion and Conclusions

This study follows a range of crowdfunding campaigns through their lifecycle, analysing the interactions between a campaign and its followers on social media. In the first section of this study, we identify the important role social media plays in enabling crowdfunding campaigns to reach new potential backers that otherwise may not have been aware of the campaign. Next, this study used two established theories (social capital and social identity) to make sense of how social media interactions change during crowdfunding. An overview of our findings is presented in Table 4-3. These findings illustrate that campaigns funded at different stages

assemble backers in contrasting ways, attributable to differences in social capital and social identity.

Table 4-3. Summary of Findings.

Hypothesis	Support?	Insights
H1: level of discussion	Yes	Discussion drops in mid-stage for all outcomes.
H2: Entrepreneurs' Responsiveness	Partial	Entrepreneurs' responsiveness varies for projects funded at different stages, as do patterns of changing responsiveness.
H3(a): Network Density	Partial	Network density varies for projects funded at different stages, as do patterns of changing network density.
H3(b): Network Diameter	Partial	Network diameter varies for projects funded at different stages, as do patterns of changing network diameter.
H3(c): Network Reciprocity	No	No evidence that network reciprocity varies at different stages or for projects funded at different stages.
H3(d): Network Clustering	No	No evidence that network clustering varies at different stages or for projects funded at different stages.
H4: Text Complexity	Partial	Text complexity varies for projects funded at different stages, as do patterns of changing text complexity.
H5: Text Sentiment	No	No evidence that text sentiment varies at different stages or for projects funded at different stages.

The first, and perhaps least surprising, contribution of this study is further evidence that weak ties play an important role in a crowdfunding campaign. Findings from this study show that successful crowdfunding campaigns tend to have a social network with a low *density*, and a wide *diameter*. These findings support previous research with similar conclusions (Hekman & Brussee, 2013), and adds to that literature by illustrating that successful campaigns which have a wide network from the outset of the campaign tend to reach their funding targets early.

This second contribution of this study illustrates how crowdfunding campaigns that are funded at different times create fundamentally different discussion behaviours on social media. We contribute to previous research, that highlights the different phases and lifecycle of a crowdfunding campaign (c.f. Y. Chen et al., 2018; Crosetto

& Regner, 2018). The social media dynamics of crowdfunding campaigns that reach their target early in their campaign appear relatively stable from the outset. *Density* of the network remains low, and the *diameter* of the network is consistent as the campaign progress. Similarly, the level of social media discussion and entrepreneurs' responsiveness is also more consistent among crowdfunding campaign that meet their targets early, which also manifest a lower level of complex language used throughout the discussion.

The intuitive explanation for these findings is these campaigns (the ones that reached targets early) have already established a wide network, consisting of both strong and weak ties. In contrast, crowdfunding campaigns that reached targets late appear to have built up their network in the course of that campaign. These campaigns appear to create new weak ties early, then strengthen these ties to trigger funding commitment as the campaign progresses. Campaigns that reached funding targets in the middle of their campaign present different dynamics to those funded early or late. These campaigns show sharp increases during that middle stage for both responsiveness and network *diameter*, with a decrease in network *density*. During the latter stage (after funding), these factors return to similar levels in the early stage. This suggests these campaigns reach their funding goal through their network of strong ties, as new weak ties have not strengthened enough to contribute. Thus, their dynamics are characterized by consolidation.

The third contribution of this study is to explore the complexity of the language used by a crowdfunding project's social network and the impact it may have on the success of its campaign. Initial theorizing argued that accessible language will enable the

formation of new weak ties to other networks, which in turn will enable the bridging of separate networks and the flow of information to all segments (Weimann, 1980). Our results show that crowdfunding campaigns that were successful early were characterized by consistently simple and easy to comprehend social media discussion. These are the same campaigns that had a low social network *density* and wide social network *diameter*. This may mean the simple and easy to understand nature of the language around those campaigns helped these social networks to grow before the campaign. These results contribute to the growing body of research that is focused on the language used by crowdfunding campaigns, and its impact on the overall success (c.f. Allison et al., 2015; Gorbatai & Nelson, 2015; Mitra & Gilbert, 2014; Shafqat et al., 2016).

4.9.1 Implications for Practice

This study has three major implications for practice, specifically for entrepreneurs looking to use Kickstarter as a way of raising funds to launch a new product.

First, this study reinforces the importance of engaging with customers and potential backers through social media. Social identity literature suggests that through constant discussions with the crowd, a crowdfunding campaign can portray their identity (Kissel & Büttgen, 2015; Rapp et al., 2013). Our results show that successful crowdfunding projects have a more constant social media discussion throughout the campaign, and a more engaged and responsive crowd. This builds upon social identity literature that argues that highly engaging social media campaigns are likely to generate commitment on part of the consumer, reinforcing loyalty to the brand, and

making the customer more likely to commit additional effort to support the brand in the future (Hoffman & Fodor, 2010).

Second, entrepreneurs should recognize the importance of bringing different networks together, and the need for information to be distributed to a wide number of potential backers. To do this, entrepreneurs must urge their followers to share information with other networks, embracing the 'viral' nature of social media to spread information to more potential backers (A. M. Kaplan & Haenlein, 2011). In doing this, a crowdfunding campaign becomes visible to a much wider audience. This increases the likelihood that the campaign will reach its funding target in the early stage of its campaign.

Third, entrepreneurs must create a large network of followers before the crowdfunding campaign begins. The size of an entrepreneur's social media network is a significant predictor of campaign success (Zheng et al., 2014). Thus, to increase the chances of success, project creators need to work to build this network before the start of their crowdfunding campaign. This acts to mitigate risk and safeguard against embarrassing public failure (c.f. Gleasure, 2015).

4.9.2 Limitations

The limitations of this study stem largely from the limited data gathered and analysed. First, data were gathered from a single rewards-based crowdfunding platform, based in the USA. Therefore, the results observed here may not generalize to other crowdfunding platforms, where markets, investment returns, and design features may be different. Second, we relied on social media data from a single social media platform, Twitter. Extrapolating our findings to other crowdfunding and social

media platforms is therefore dangerous and requires careful replication and refinement. Third, while the number of tweets analysed was substantial, our sample of crowdfunding campaigns can be considered small relative to previous empirical crowdfunding research. Therefore, results need to be interpreted carefully, and a further confirmatory study with a larger sample size would need to be performed in order to reinforce the results found in the study.

5 Chapter Five - The Impact of Equity Crowdfunding on Public Discourse on Social Media

5.1 Abstract

Equity crowdfunding has grown rapidly in recent years, driven by strong demand from start-ups seeking alternatives to venture capital and traditional capital sources. It is a complex and innovative financing model that enables start-ups to acquire finance in a new way, but also helps to stimulate innovation through interactions with the crowd. A major motivation for crowdfunding is the capacity to build market awareness and create public discourse around a start-up. However, the actual impact of crowdfunding on organizational image remains an area of uncertainty. This study explores this gap using a quantitative analysis of social media sentiment for start-ups running equity crowdfunding campaigns on Crowdcube, a popular UK-based platform. Our findings highlight several important effects and moderating factors that influence how the act of crowdfunding impacts social media sentiment around a start-up. These findings have significant implications for start-ups wishing to maximize the reputation-building potential of crowdfunding.

Keywords: Equity Crowdfunding; Social Media; Sentiment Analysis; Organizational Image; Hedonic Decline

5.2 Introduction

Fundraising is one of the greatest challenges for new ventures (Cosh et al., 2009; King & Levine, 1993; Shane & Cable, 2002), many of whom require significant investment before they begin to generate sustainable revenues (Barr et al., 2009). In recent years, crowdfunding has emerged as an alternative way for innovative start-ups and entrepreneurs to fund their venture and bring new products to the market (Agrawal

et al., 2014; Belleflamme et al., 2014; Mollick & Robb, 2016). One of the major advantages of crowdfunding is the ability to fund innovative start-ups that may have been too high risk or unusual for traditional investors (Schwienbacher & Larralde, 2010). Hence, rather than relying on a small number of large investments from these traditional sources, crowdfunding allows smaller speculative investments from larger numbers of less-experienced or casual investors (Riedl, 2013).

Yet, despite the value of this added avenue of funding, many start-ups do not see this as the foremost motivation for crowdfunding. Rather, they are also motivated by the marketing potential it affords, and the unique ability to create viral marketing and a positive public discourse around the organization (Belleflamme et al., 2013; Gerber & Hui, 2013). This potential has been discussed at length, particularly with regards to the synergy between crowdfunding and social media as vehicles for market awareness and strong consumer relationships (Aitamurto, 2015; T. E. Brown, Boon, & Pitt, 2017; Lu et al., 2014). Such qualities are a considerable asset for start-ups, many of whom rely heavily on their reputation in the early stages of growth (Baron & Markman, 2003; Nagy et al., 2012). Yet despite this espoused benefit, there is a lack of evidence for such a positive effect from crowdfunding on organizational image. Indeed, in many cases crowdfunding appears to have created notable public discontent among investors – one notable example being the Oculus Rift (Gleasure & Feller, 2016c).

Reputation and organizational image are just as important for emerging start-ups as established businesses. For established businesses, a firm's reputation summarizes its past actions (Weigelt & Camerer, 1988), and enables other market participants to

assess its identity (Fombrun, 1995). However, start-ups and SMEs may not have an established reputation or organizational image (Abimbola & Vallaster, 2007). Thus, in launching a crowdfunding campaign these entrepreneurs are challenged to build such an image in a relatively short period (J. S. Hui, Gerber, & Gergle, 2014). The role of reputation and image is particularly important for crowdfunding markets, where it plays an important role in signalling quality and compensating for heightened information asymmetry (Agrawal et al., 2014; Courtney et al., 2017; M. Lin et al., 2013). This means that how a start-up builds organizational image and reputation is a key strategic consideration when considering if and how to crowdfunding their venture (J. S. Hui, Gerber, et al., 2014).

This study explores the question of whether, and how, consumer sentiment towards an organization changes after crowdfunding. Specifically, we use social media to investigate how public sentiment around a start-up or product is impacted by an equity crowdfunding campaign. Equity is chosen as the duration of the relationship between start-ups and investors is uncertain and the commitment is typically to the company itself, rather than a particular product or service. Hence image is especially important, as it is less likely to be compartmentalized by time or offering. The following section explores existing literature concerning the impact of crowdfunding on organizational image. This literature describes crowdfunding as a vehicle to transform members of the public from external consumers to internal stakeholders, and how this affects the interaction of organizations with these transformed individuals over social media. Following this, we present four hypotheses that explore how the image of a start-up is affected by the act of crowdfunding, as well as how they interact with the public through social media. These hypotheses are tested

in a field study of Crowdcube, a British equity crowdfunding platform. Findings are then presented that highlight several moderating factors that influence the effect of crowdfunding on public sentiment on social media. Finally, these findings are discussed in relation to existing literature.

5.3 The Emergence of Crowdfunding

Crowdfunding originates within the broader concept of crowdsourcing, which involves utilizing a multitude of humans to gather ideas, and solutions to solve a wide variety of problems (Howe, 2006; Kleemann et al., 2008). Online crowdfunding is relatively new, as fast-growing platforms such as Crowdcube, Kickstarter and Indiegogo have provided small to medium businesses with a new way to access capital. These platforms began as innovative start-ups themselves, and are now providing other early-stage and innovative start-ups with the ability to fund their businesses via non-traditional financing methods. According to several studies, there are four paradigms of crowdfunding (Belleflamme et al., 2014; Bradford, 2012; Gleasure & Feller, 2016b). These four categories are Crowd Charity (e.g. GoFundMe), Rewards-based Crowdfunding (e.g. Kickstarter), Debt-based Crowdfunding (e.g. Lending Club), and Equity Crowdfunding (e.g. Crowdcube).

This study focuses on equity crowdfunding, which enables investors to receive a stake (or equity) in early-stage companies in return for their funds, so becoming more than just customers or donors (Ahlers et al., 2015). Instead of fixed instant rewards with rewards-based crowdfunding, investors are given a share of the start-up in return for their contribution (Griffin, 2012). Therefore, equity crowdfunding represents the longest-term commitment on behalf of both investors and

fundraisers. This brings the importance of image sharply into focus, as positively or negatively disposed investors may remain with the organization indefinitely.

For many start-ups, the marketing aspect of crowdfunding is just as important, and sometimes more important, than just raising funds for the venture (Belleflamme et al., 2013; Gerber & Hui, 2013; Gleasure, 2015). Crowdfunding campaigns provide start-ups with the ability to form relationships with investors and ultimately build brand awareness through social media use (T. E. Brown et al., 2017). Fundraisers market their crowdfunding campaign by engaging with potential investors through social media, asking their followers to employ viral marketing strategies. Through social media, fundraisers (and external onlookers) can gauge how the emotions of the public and how they feel about their product or start-up.

5.4 Crowdfunding and Organizational Image

Discussions of 'image' in business can be traced back to Gardner and Levy (1955) who described it as an important part of a product, specifically, it's 'social and psychological nature' as perceived by consumers. Over time, this product-centric view was expanded to focus on the organization behind specific products and services (T. J. Brown & Dacin, 1997; Dutton & Dukerich, 1991; Gioia, Schultz, & Corley, 2000). Organizational image has subsequently been examined in many different disciplines, most notably marketing and management.

There are three leading views of organizational image in marketing literature (Lopez, Gotsi, & Andriopoulos, 2011). The first view is that organizational image represents the total impression an organization makes on the minds of the public (Dichter, 1985; J. G. Gray, 1986; Kennedy, 1977). The second view differs by positioning the public as

active constructors of organizational image, rather than passive spectators (Balmer, 1995; E. R. Gray & Balmer, 1998; M. Johnson & Zinkhan, 1990; Margulies, 1977). Finally, organizational image is seen as larger than just practical perceptions and expectations, defining it as "a person's belief about an organization" (Dowling, 2004, pg.21). What unites these definitions is the assumption that organizational image is something perceived by an external onlooker, meaning it is shaped by those external onlookers' experiences, impressions, beliefs, and knowledge about an organization (Bernstein, 1984; Dowling, 1986; Markwick & Fill, 1997).

In contrast, management literature views organizational image as the product of internal organization members' beliefs for how others view their organization, or 'construed external image' (Dutton et al., 1994). As with marketing, three key views of organizational image were found in management literature. The first describes an organization's desired image at a value-level; the way that top management would like outsiders to view the organization (Whetten, Lewis, & Mischel, 1992). The second definition links organizational image to identity, treating image construction as a form of social bonding between and among internal and external actors, based on shared norms and mutual understanding (Gioia et al., 2000). The third views takes a historic view of organizational image and identity, treating image as a vestige of previous interactions; an accumulated impression left on external individuals that internal members must use to contextualize subsequent interactions (Hatch & Schultz, 2000; Reynolds, 1965). In contrast to the marketing literature, these views layer the perceptions and values of internal stakeholders onto the perceptions and values of the public. This emphasizes not just the importance of a 'good' image but also that of fit between the various parties.

The act of crowdfunding becomes more complicated in light of this image-related distinction between internal and external individuals, as well as the need to ensure the alignment of perceptions and values between the two. This is because the internalization of members of the public creates a strange hybrid at the boundary. This move from external consumers to internal stakeholders is particularly relevant with equity crowdfunding, where investors receive a piece of the start-up. This has four profound implications for the construction and maintenance of positive organizational image.

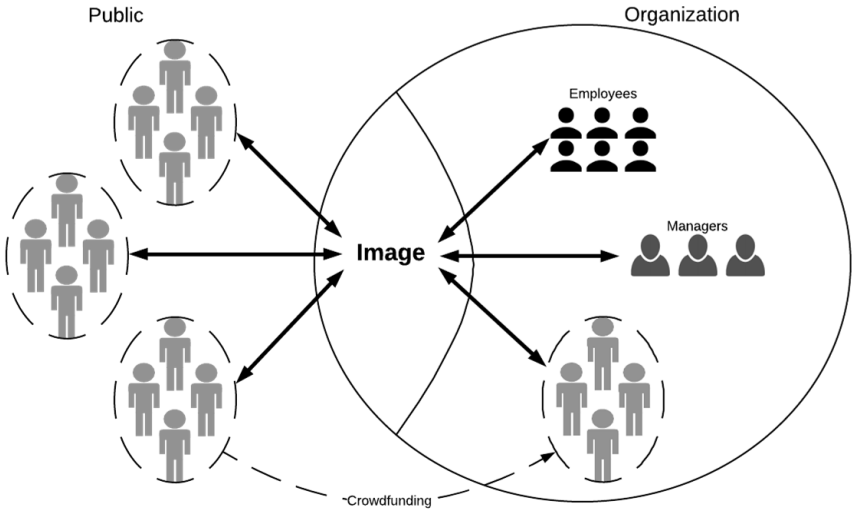


Figure 5-1: Crowdfunding Investors move from External to Internal Stakeholders.

First, internalized members of the public assume a vested interest in the organization (Ordanini et al., 2011; Vismara, 2016a; Zheng et al., 2018). This changes the relationship at a fundamental level, as many investors' motivation moves from supporting a venture to actively participating in it (Gleasure & Feller, 2016b). Thus, investors may assume a role in external image construction, taking pains to avoid any discussion that would be perceived negatively by external onlookers.

Second, internalized members of the public assume some sense of control over the organization (Aitamurto, 2011; Hunter, 2015; Zheng et al., 2018). While this is also true of external customers, the focus of customers' attention is typically on specific behaviours and outputs (Bendapudi & Leone, 2003). In contrast, the control exercised by internal members may be much broader and less situation-specific, as the deeper norms that make up the organizational 'clan' are continuously negotiated (Chua et al., 2012; Kirsch, Ko, & Haney, 2010). Thus, investors may assume a role in internal image construction, as investors strive to persuade other internal members to behave in specific ways and to build longer-term mutually-supportive relationships (Alvesson & Willmott, 2002; Cardinal, Sitkin, & Long, 2004).

Third, internalized members of the public are likely to become homogenized with the culture of the organization. Individuals within an organizational boundary typically begin to converge in terms of norms and values (Allen & Meyer, 1990; Ashforth & Mael, 1989; Meyer & Rowan, 1977). As these individuals become more embedded within the collective identity, they may become increasingly defensive of assimilated collective norms and values – particularly where challenges or criticisms come from outside the organization or group (Ravasi & Schultz, 2006). This often leads to increasing extremism of opinions, as individuals confuse increasing homogeneity with convergence from different perspectives (Myers, 1975; Schkade, Sunstein, & Kahneman, 2000). Hence, image construction by investors may follow different dynamics after the act of crowdfunding.

Fourth, internal actors in an organization are motivated differently than external actors. Specifically, the addition of extrinsic motivation, e.g. financial rewards, often

mean these rewards become the main driver of behaviour (Kohn, 1993; Pink, 2011). In contrast, hobbies rely on intrinsic motivation, i.e. the pleasure taken from engaging in behaviours and completing tasks (Deci & Ryan, 2000). Such intrinsic motivations play an important role for participation in crowdsourcing of different types (Alexander Hars, 2002; Hossain, 2012; Pilz & Gewald, 2013). This is problematic, as the addition of extrinsic rewards often erodes intrinsic motivations (Deci & Ryan, 2000). Perhaps more importantly, while intrinsic rewards tend to be sustainable over time (Kohn, 1993), extrinsic rewards are often subject to satiation and hedonic decline (Galak & Redden, 2018). This suggests investors may be more likely to 'burn out' on a venture once they have a financial stake in it.

5.5 Hypothesis Development

Building on the three major changes noted above, the first hypothesis suggests that, as investors move from external consumers to internal stakeholders, the sentiment of social media comments after a successful crowdfunding campaign will change. The likely direction of such a change isn't entirely clear. On one hand, a negative trend is possible as excitement fades and the inevitable delays, disagreements, and frustrations associated with crowdfunding emerge (Mollick, 2014). Even where projects perform well, there may be some diminishing enthusiasm due to hedonic decline, provided investors receive sufficient engagement to become satiated (Galak & Redden, 2018). On the other hand, a positive trend may result if investors adopt additional responsibility for the welfare of the start-up, as they become mindful of maintaining a positive impression for external onlookers (Bolino, 1999; Lillqvist & Louhiala-Salminen, 2014). There may further be a legitimate surge in positive sentiment based on excitement for the newly formed partnership. This 'honeymoon

effect' commonly manifests a surge in satisfaction and happiness immediately following a job change, shortly followed by a decline in job satisfaction (Boswell, Boudreau, & Tichy, 2005). Consistent with the general expectation that crowdfunding can produce positive hype and word of mouth marketing (Gleasure, 2015; Ordanini et al., 2011), we hypothesize the positive effects will outweigh the negative. Thus,

H1*: The sentiment of social media comments will become more positive after a successful crowdfunding campaign.*

The second hypothesis considers the extent of the transformation of external consumers to internal stakeholders. Specifically, we explore if there is a difference between the sentiments of social media comments made by members of the public and those made by the start-up themselves. Organizations typically rely on social media sites, such as Facebook, for sharing content and promoting their crowdfunding campaign (Lu et al., 2014; Wessel et al., 2016). However, they also rely on these platforms to manage their external image more broadly, meaning they are under continuous pressure to ensure they convey consumer satisfaction (Aula, 2010; Schniederjans, Cao, & Schniederjans, 2013). Were investors to become truly internalized, this burden should become equally shared. However, most organizations rely disproportionately on central organizational figures and upper management to maintain this image (Dutton & Dukerich, 1991; Elsbach & Sutton, 1992). Thus, we hypothesize that a start-up's comments will assume more of this responsibility, therefore be more positive overall:

H2*: The sentiment of social media comments around a crowdfunding campaign made by the start-up will be more positive than those made by members of the public.*

Our next hypothesis examines the intensity of discussion on a social media page, and its effect on the sentiment score. The effects of internalization, particularly anticipated increases in investors' sense of control and homogeneity, require extensive interaction between those investors and the organization they backed. Both of these effects contain a strong quantitative element, i.e. they increase proportionally with the number of interactions (though obviously, some interactions are more control-reinforcing and homogenizing than others). In simple terms, the intensity of discussion may be therefore approximated by the total number of social media comments about a specific organization. As companies promote and market their crowdfunding campaign, hype is created around the social media page. Indeed, many studies have shown some link between the level of fundraising and the frequency of comments made either on social media (Kromidha & Robson, 2016; Stiver et al., 2015) or the fundraising platform itself (Block et al., 2018; A. Xu et al., 2014). Thus, we hypothesize the added hype and excitement of more frequent interactions will lead to an increase in engagement and therefore more positive sentiment:

H3*: The sentiment of social media comments around a crowdfunding campaign will be more positive according to the frequency of comments posted.*

Our final hypothesis focuses on the balance of participation between members of the public and the organization themselves. On one hand, having argued that comments by organizations are more likely to be positive than those by members of the public,

it is mathematically sensible that greater public participation will have a negative impact on sentiment. Further, an excessive amount of investor commenting can be a sign of discontent with an organization (Gleasure & Feller, 2016c). On the other hand, greater levels of participation from investors and other members of the public are intuitively a sign of enthusiasm. Indeed, existing research on organizational image has suggested the level of interaction between central organizational figures and other stakeholders is key to their image-related bonding (Dutton et al., 1994). This is because it breaks down perceived power-distances and allows individual relationships to form between members (S. G. Scott & Lane, 2000). Members of the public should become more organization-like, therefore positive in sentiment, as a result of their intensive participation. Once again, in light of this ambiguity, we side with the dominant view that well-run crowdfunding campaigns produce positive hype and word of mouth marketing, based on a foundation of investor-led discussion. Thus, we hypothesize:

H4*: The sentiment of social media comments around a crowdfunding campaign will be more negative according to the proportion of comments made by members of the public*.

5.6 Method

5.6.1 Data Gathering

To test our hypotheses, we gathered data from Crowdcube, an established UK based equity crowdfunding platform. Crowdcube is an online equity crowdfunding platform that enables the general public to invest in start-ups, early-stage, and growth businesses, alongside professional investors. Since its launch in February 2011, Crowdcube has become one of the leading crowd investment platforms in the UK,

with 490,000 investors registered, they have raised nearly £400 million to help fund 630 companies. As of 2017, Crowdcube had also provided returns for investors of £6.6 million through equity exits and interest repayments (Crowdcube, 2017a).

Crowdcube was selected for two key reasons. First, Crowdcube is an established platform that has been operating for over seven years at the time of writing. This means the dynamics of the platform are relatively mature. It also means there have been a number of relatively high profile successes, creating a level of public awareness, and investor diversity. Second, Crowdcube caters to investors of varying experience. Professional and non-professional investors can give as little as £10 to fund a start-up. Hence, as a sample of equity crowdfunding, Crowdcube provides a diverse crowd made up of experienced and inexperienced investors.

From Crowdcube, we gathered information on 105 randomly-sampled equity crowdfunding campaigns that had been successfully funded and reached their target. This was a snapshot-sampled data (E. H. Kaplan, 1997), with enough campaigns gathered for the purpose of this study. All of these campaigns had finished funded between August 2016 and September 2017. For each campaign, we manually collected information that was accessible through the Crowdcube platform. We gathered information such as date funding finished, the total amount raised, number of investors, target, etc. A sample of the data gathered on each campaign can be seen below in Figure 5-2.

Campaign Information									
Name	Incorporation Date	6 Months Before	Date Funding Finished	6 Months After	Amount Raised	# of Investors	Target	Equity Given	Pre-CF Valuation
Fishy Filaments Ltd	04/07/2017	06/03/2017	06/09/2017	06/03/2018	£ 205,020	407	£ 140,000	32.29%	£ 430,000
York Cocoa House	16/09/2011	05/03/2017	05/09/2017	05/03/2018	£ 311,480	494	£ 250,000	15.11%	£ 1,750,000
Excellent Gourmet Trading Limite	15/08/2014	01/03/2017	01/09/2017	01/03/2018	£ 220,440	302	£ 100,000	21.60%	£ 800,000
Wild Card Brewery Limited	24/07/2012	01/03/2017	01/09/2017	01/03/2018	£ 297,000	359	£ 250,000	8.39%	£ 3,245,000
FEAST Hq Limited	22/01/2015	28/02/2017	28/08/2017	28/02/2018	£ 152,570	318	£ 150,000	3.67%	£ 4,000,000
RS Scan Lab	09/06/1999	24/02/2017	24/08/2017	24/02/2018	£ 990,490	977	£ 750,000	9.01%	£ 10,000,000
GrafterNow Ltd	25/11/2016	24/02/2017	24/08/2017	24/02/2018	£ 233,340	329	£ 150,000	11.20%	£ 1,850,000

Figure 5-2: Sample of Campaign Data

As social media is widely used in crowdfunding to promote a campaign and engage with potential investors (Young, 2012), it would also provide a good measure of the sentiment of the crowd before and after a crowdfunding campaign. We chose Facebook to gather social media data, as it was the most popular social media platform among the sampled companies. Of the 105 crowdfunding campaigns that were gathered from Crowdcube, 15 were excluded from our analysis. 9 crowdfunding campaigns did not have a Facebook page, while 6 Facebook pages were missing/could not be found. This left us with 90 crowdfunding campaigns for which we could collect social media data.

To collect this Facebook data, we used a package in R, called 'Rfacebook' (Barbera, Piccirilli, & Geisler, 2018). This package provides access to the Facebook Graph API, as well as including several other functions to extract visible information about users and posts from Facebook pages. Our search was limited to six months before a campaign finished funding, and six months after. A sample of the data collected can be seen below in figure 5-3.

FromID	Message	DateCreated	ID	CommentOrR	UserOrProfi
UserID	Why?	2017-03-13T15:36:22+0000	1063242047115489_1063270893779271	Comment	User
929031237203238	Why not ?	2017-03-13T15:39:05+0000	1063242047115489_1063272847112409	Comment	Profile
UserID	Panos Sakkas	2017-03-20T23:44:00+0000	1068902863216074_1069085976531096	Comment	User
UserID	Congratulations, love the green :)!	2017-04-27T08:47:26+0000	1099876536785373_1100349440071416	Comment	User
UserID	Looking good!	2017-05-28T18:26:18+0000	1122970437809316_1125954137510946	Comment	User
UserID	Hi Ian. Not sure if you know but this is us :-). Will	2017-06-08T15:35:22+0000	1137335173039509_1137422339697459	Comment	User

Figure 5-3: Sample of Facebook Comments

After data were gathered, we had a dataset that consisted of information on 88 crowdfunding campaigns, as well as Facebook data for each campaign (2 further campaigns were excluded as no Facebook comments were found) – see examples in Figure 5-4 below.

Campaign Information	Facebook Data 6 Months Before Campaign						Facebook Data 6 Months After Campaign					
Name	Number of Comments Before	1st Level Comments (comments)	2nd Level Comments (replies)	Number of Comments From Public	Number of Comments From Campaign	Participation (of the Public)	Number of Comments After	1st Level Comments (comments)	2nd Level Comments (replies)	Number of Comments From Public	Number of Comments From Campaign	Participation (of the Public)
Fishy Filaments Ltd	22	14	8	14	8	0.6364	12	12	0	9	3	0.7500
York Cocoa House	37	26	11	34	3	0.9189	85	66	19	79	6	0.9294
Excellent Gourmet Trading Limite	2	2	0	1	1	0.5000	3	3	0	3	0	1.0000
Wild Card Brewery Limited	56	39	17	50	6	0.8929	66	50	16	62	4	0.9394
FEAST Hq Limited	1	1	0	1	0	1.0000	3	3	0	3	0	1.0000
RS Scan Lab	113	93	20	104	9	0.9204	42	36	6	42	0	1.0000

Figure 5-4: Sample of Social Media Data

5.6.2 Data Analysis

Sentiment was analysed using the AFINN sentiment lexicon (Hansen et al., 2011), which was originally designed by Finn Årup Nielsen for microblogs. This lexicon contains a list of 2,477 manually labelled English words and phrases with integer values ranging from -5 (negative) to 5 (positive). Previous studies have validated the effectiveness of this lexicon in analysing sentiment on social media, in particular, Twitter and Facebook (Collins et al., 2013; Gamallo & Garcia, 2014; Riloff et al., 2013; Y. Wang et al., 2013).

Each Facebook comment (total N = 47,166) on the sampled start-up pages was cleaned, and allocated binary variables to indicate (i) whether the comment was from the start-up or a member of the public (ii) whether it occurred before or after crowdfunding was complete. A binary variable for comment frequency was also calculated by calculating the number of comments for each campaign, then splitting these campaigns either side of the median (25.25), then allocating a 0 or 1 to each comment from the corresponding campaign. The same process was also followed to create a binary variable for participation, based on the median (94.23%) for the

proportion of comments made on a campaign by the public. These comments were then split into individual words (total number of words = 248,474). That list of words was compared against the AFINN lexicon, with the words that appeared in both forming a new table, along with the score assigned to that word (total number of words matched = 39,354).

5.7 Results

The table below (Table 5-1) shows the results of a two-tailed analysis of variance (ANOVA), which uses sentiment score as the dependent variable, and Before or After, Public or Start-up, Comment Frequency, and Proportion of Public Participation as the independent variables.

$$\text{Score} \sim \text{BeforeOrAfter} * \text{PublicOrStartup} * \text{Comment Frequency} * \text{Public Participation}$$

Table 5-1: ANOVA Results				
Interactions	***SUM***	***MEAN SQ***	***F***	***P***
Beforeorafter	0	0.07	0.029	NS
Publicorstartup	274	273.77	106.502	< .001***
CommentFrequency	3	2.94	1.143	NS
Publicparticipation	207	206.64	80.388	< .001***
Beforeorafter: Publicorstartup	82	81.81	31.826	< .001***
Beforeorafter: CommentFrequency	1	1.12	0.435	NS
Publicorstartup: CommentFrequency	66	66.22	25.76	< .001***
Beforeorafter: Publicparticipation	135	134.86	52.464	< .001***
Publicorstartup: Publicparticipation	3	3.15	1.227	NS
CommentFrequency: Publicparticipation	30	30.24	11.763	0.001***
Beforeorafter: Publicorstartup: CommentFrequency	14	14.09	5.483	0.019*
Beforeorafter: Publicorstartup: Publicparticipation	0	0.44	0.172	NS
Beforeorafter: CommentFrequency: Publicparticipation	2	2	0.776	NS
Publicorstartup: CommentFrequency: Publicparticipation	1	1.37	0.533	NS
Beforeorafter: Publicorstartup: CommentFrequency: Publicparticipation	7	7.04	2.738	NS
Significant Codes: P < 0.001 (***), P < 0.01 (**), P < 0.05 (*), NS = NOT SIGNIFICANT				

The results suggest main effects for 2 of 4 independent variables. The first main effect identifies a difference in whether a comment was contributed from the public or the start-up. A post-hoc two-tailed t-test suggests posts from the start-up were significantly more positive in sentiment (mean score of matched words = 2.138) than those contributed from the public (mean score of matched words = 1.871), t(6260.3) = -12.4332.

The second main effect identifies a difference in whether a campaign was high or low in participation from the public. A further post-hoc two-tailed t-test suggests this effect was the opposite of what was hypothesized. Posts from Facebook pages with

lower public participation were significantly more positive in sentiment (mean score of matched words = 2.005) than those with higher participation (mean score of matched words = 1.817), $t(38858) = 11.635$, $p < .001$.

No significant main effect was observed for comment frequency. One possible explanation is that the effect is non-linear. Specifically, this variable may be predictive of positive sentiment at typical levels but become predictive of negative sentiment at extreme levels. Put differently, a large number of comments with high investor participation may be encouraging but an extremely high amount of comments may be a sign a venture is in trouble. A separate hierarchical regression on sentiment score was used to test this possibility. A hierarchical regression used the raw number of comments as a predictor, before stepping in a squared term of the predictor as an exponential term. This test showed a significant result, with $p < 0.001$. The results of this hierarchical regression are shown in Table 5-2.

Table 5-2: Hierarchical Regressions for Comment Frequency.

	MODEL 1	**MODEL 2**
Comment Frequency	-0.103***	0.068***
Square Root of Comment Frequency		-0.180***
ADJ. R^2	.011	.014
P < 0.001 (***), P < 0.01 (**), P < 0.05 (*), Ns = Not Significant		

A similar argument can be made for curvilinearity in participation, as extreme disparities may suggest organizations have retreated from social media because the tone has become hostile. Therefore, a second hierarchical regression used the raw proportion of comments from the public as a predictor, before stepping in the square root of this predictor as an exponential term. This test also showed a significant

result, $p < 0.001$. The results of this hierarchical regressions are presented in Table 5-3.

Table 5-3: Hierarchical Regressions for Participation.		
	MODEL 1	**MODEL 2**
Proportion Of Public Participation	-0.064***	0.819***
Square Root Of Proportion Of Public Participation		0.755***
ADJ. R^2	.004	.005
P < 0.001 (***), P < 0.01 (**), P < 0.05 (*), Ns = Not Significant		

No main effect was observed for whether a comment was made before or after crowdfunding, thus interaction effects were explored to examine if a more complex interdependent relationship existed.

The results also suggest four two-way interaction effects. The first two-way interaction effect identifies an interaction between whether a comment was made before or after crowdfunding and whether it was made by the start-up or a member of the public. A post-hoc interaction plot (Figure 5-5) suggests that before crowdfunding is complete, the sentiment of comments from the public and the start-up running the campaign are relatively similar. However, after crowdfunding is finished the sentiment rises for comments coming from the start-up, while comments by the public remain relatively unchanged.

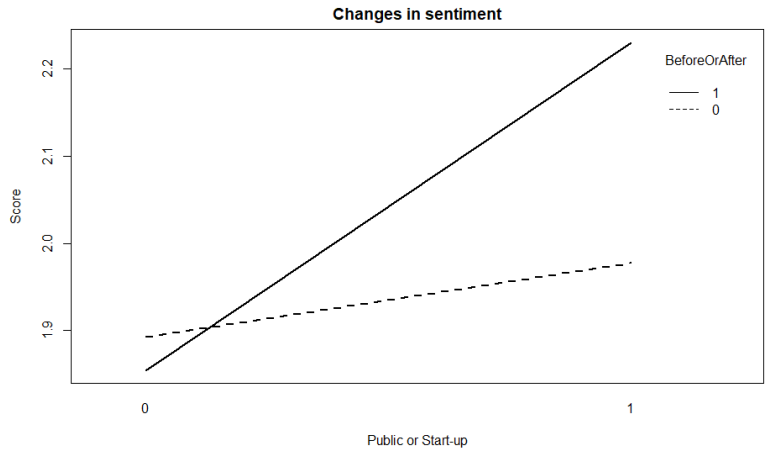


Figure 5-5: Interaction between 'Before or After' and 'Public or Start-up'

The second two-way interaction effect identifies an interaction between comment frequency of the Facebook page and whether the comment was made by the start-up or a member of the public. A post-hoc interaction plot (Figure 5-6) suggests that once again the sentiment for comments from the public is relatively unchanged. However, companies with high comment frequency show significantly more positive sentiment than those with a low frequency of comments.

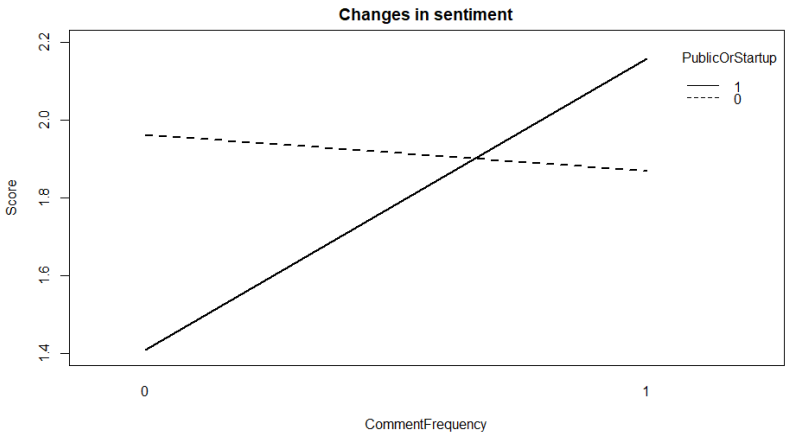


Figure 5-6: Interaction between 'Public or Start-up' and 'Comment Frequency'.

The third two-way interaction effect identifies an interaction between the timing of the comment and whether the Facebook page had high or low participation from the public. A post-hoc interaction plot (Figure 5-7) suggests little difference between

comments on high and low participation pages before crowdfunding was completed. However, after crowdfunding, sentiment became more negative for comments on pages with a high proportion of investor participation and more positive for comments on pages with a low proportion of investor participation.

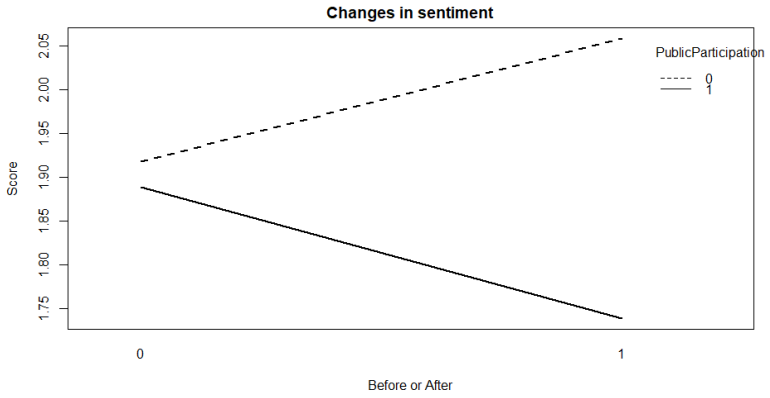


Figure 5-7: Interaction between 'Participation' and 'Before or After'.

The fourth two-way interaction effect identifies an interaction between the comment frequency of the Facebook page and whether the Facebook page had high or low participation from the public. A post-hoc interaction plot (Figure 5-8) suggests that comments on low-participation Facebook pages were more positive in sentiment when comment frequency was high and more negative when comment frequency was low. In direct contrast, comments on high-participation Facebook pages were more positive in sentiment when comment frequency was low and more negative when comment frequency was high.

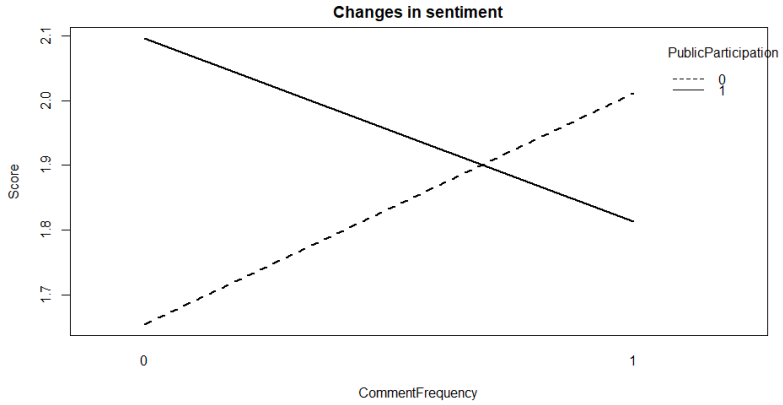


Figure 5-8: Interaction between 'Participation' and 'Comment Frequency'.

Finally, the results also suggest a single three-way interaction. To make sense of this interaction, we split our data into 2 subsets and ran post-hoc interaction plots for each separately; one where comment frequency was low (Figure 5-9), and one where comment frequency was high (Figure 5-10). These plots suggest that comments by members of the public remain relatively unchanged before and after crowdfunding, regardless of whether a Facebook page has a high or low level of comment frequency. However, the relationship for comments from a start-up is more complex. For low-frequency comment Facebook pages, sentiment became more negative for comments by companies after crowdfunding. Alternatively, for high-frequency comment Facebook pages, sentiment became more positive for comments by companies after crowdfunding.

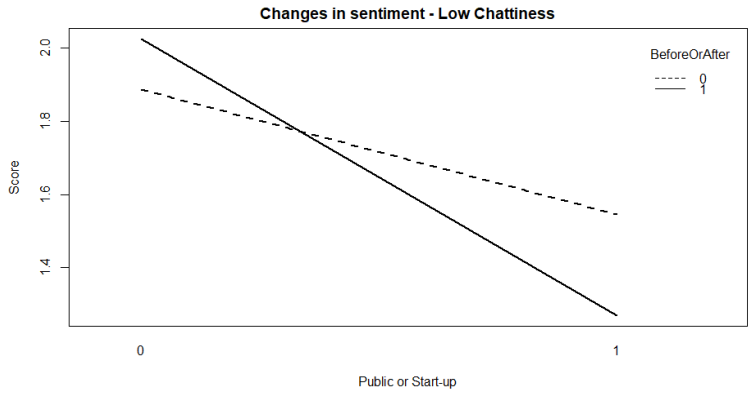


Figure 5-9: Interaction between 'Before or After' and 'Public or Start-up' – Low Comment Frequency.

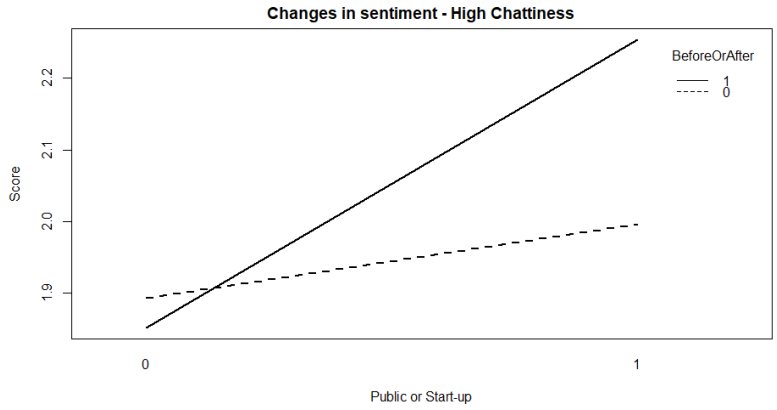


Figure 5-10: Interaction between 'Before or After' and 'Public or Start-up' – High Comment Frequency.

5.8 Discussion

This study has explored changes in social media sentiment before and after equity crowdfunding campaigns. An organizational image perspective suggested that not only should the act of crowdfunding impact on social media sentiment, so should (i) whether comments are made by the start-up or members of the public (ii) the level of overall comment frequency by the start-up and its investors on social media (iii) the overall proportion of comments made by members of the public as compared to the start-up itself. Facebook data were gathered and analysed 6 months prior and

after crowdfunding for 105 companies on Crowdcube, a UK-based equity crowdfunding platform.

Our findings supported two hypotheses, confirming that sentiment was more positive for comments made by the start-up and for comments made on Facebook pages with more participation from the public.

The observation that comments made by an organization have a more positive sentiment supports our initial theorizing that organizations use social media to project a positive image both during and after crowdfunding. This reinforces previous research highlighting the role of crowdfunding in marketing (Gerber & Hui, 2013; Ordanini et al., 2011). Carefully-toned social media discourse is seen as an important part of this marketing, as professional and positive language can lead to a positive impact on performance and trust (Barcelos, Dantas, & Sénécal, 2018; Gretry et al., 2017).

The observation that higher levels of public participation have a negative impact on sentiment supports our initial theorizing linking diminishing organizational control with negative sentiment. What is more surprising is this effect did not show any signs of changing at the extremes, i.e. there is no suggestion that it is only particularly high levels of participation that may signal a problem with the start-up. This lack of complexity contrasts with findings from rewards-based crowdfunding where the relationship tends to be either moderately positive (Mollick, 2014; Shi & Guan, 2016), or harder to decipher (Gleasure & Feller, 2016c). One explanation for this is the limited number of participants in equity crowdfunding and the greater long-term commitment, both of which may limit individual investors' willingness to escalate

negative discussion about the organization beyond a certain point. This consistent negative correlation between public participation and sentiment challenges findings in previous research that associate public participation in social media with other positive outcomes, such as increases in customer visits, and profitability (Rishika et al., 2013). More specifically related to crowdfunding, it also challenges 'viral' strategies around participation, whereby participation signals the reliability and attractiveness of a venture to other potential investors, so encouraging more participation from less-familiar social groups (Agrawal et al., 2011).

Contradictory to initial theorizing, the frequency of comments did not have the anticipated effect on sentiment. Interestingly, an interaction effect for sentiment was observed between comment frequency and participation. This interaction suggests that comments on low-participation Facebook pages, a greater comment frequency was associated with more positive sentiment, while the opposite was true for high-participation Facebook pages – greater comment frequency was associated with more negative sentiment. This likely reflects those occasions when some issue has arisen and organizations are slow to engage with the public, so creating a cycle of increasing dissatisfaction (Gleasure et al., 2019). This supports a range of other studies suggesting that organizations need to remain engaged with the public over social media (D. Evans, 2010; Kromidha & Robson, 2016; Nevin et al., 2017b; Pfeffer, Zorbach, & Carley, 2014).

Further contradictory to initial theorizing, there was no significant change in sentiment for comments made before or after crowdfunding. This was a surprise, given the scale of the change involved in transitioning members of the public from

external consumers to internal stakeholders. However, the examination of interaction effects revealed there was a significant change; it was just more complex than anticipated.

Findings suggest while the sentiment among members of the public doesn't change, the sentiment in comments from the organization becomes notably more positive. One explanation for this is the organization is simply grateful, hence becomes more positively disposed towards the public. However, this would likely incur reciprocity of sentiment, particularly if many members of that public have become internalized. A more satisfactory explanation is the increasingly positive sentiment from organizations is born of necessity, as the start-up must become more positive to maintain a similar sentiment to before the crowdfunding campaign. This resonates with the transition from intrinsic to extrinsic motivations for investors and the subsequent decline in enjoyment over time.

Human beings typically maintain homeostatic levels of happiness and excitement over time, meaning externally-driven happiness requires continuous stimulation, a phenomenon known as the 'hedonic treadmill' (Brickman, 1971; Diener, Lucas, & Scollon, 2006). Repeated exposure to the same stimuli results in a hedonic decline, due to a combination of psychological or biological adaptation and/or satiation (Galak & Redden, 2018; Rankin et al., 2009; Thompson & Spencer, 1966). This suggests an organization needs to increase positive sentiment in order to maintain similar levels of excitement among investors over time. One could compare this to drug addicts requiring an increasing dose to achieve a similar high. This explanation is further reinforced by the three-way interaction showing the difference is reversed

in Facebook pages with a low frequency of comments. Fewer interactions mean this hype and excitement is unlikely to feature heavily at the outset, meaning investors are unlikely to reach satiation and become desensitized.

5.8.2 Implications for Practice

This study has two major implications for practice, specifically for start-ups that are looking to use equity crowdfunding as a way of raising capital for their business.

First, we reiterate the importance of maintaining a strong presence in social media discussions for any start-up running an equity crowdfunding campaign. Our findings suggest the image-related benefits are contingent on not just attracting substantial discussion, but also remaining centrally-involved over time. This forces organizations to become 'gardeners' of the tone on their social media. Left to their own devices, many investors will become disinterested, desensitized, and prone to decreasingly positive commentary. Alternatively, organizations may wish to create a separate discussion area for hedonically-declining investors if they feel the viral potential they offer outweighs the threat to their public image. The implications of such a move are not clear, not least concerning the desirability of such an option for investors. This remains an open practical question for start-ups moving forward.

Second, start-ups need to understand the implications of transforming external consumers to internal stakeholders. This fundamentally changes their relationship with organizational image. Managing this transition is therefore not only meaningful in terms of social media sentiment and marketing; it represents a conceptual shift that may change how those individuals see themselves and the role and responsibilities of the organization for them personally. For example, investors may

feel that specific organizational behaviours and attitudes embarrass them personally, due to their higher psychological association with the organization. Organizations that build this association must assume some responsibility and communicate with investors appropriately throughout their evolving relationship.

5.8.2 Limitations and Future Research

The limitations of this study stem largely from the limited data gathered and analysed. First, data were gathered from a single equity crowdfunding platform, based in the UK. Therefore, the results observed here may not generalize to other crowdfunding platforms, where markets, investment returns, and design features may be different. Second, we relied on social media data from a single social media platform, Facebook. Extrapolating our findings to other crowdfunding and social media platforms is therefore dangerous and requires careful replication and refinement. Third, we relied on data from crowdfunding campaigns that have been successfully funded by the public and, to our knowledge, none of those sampled has attracted wide-reaching criticism. Hence, we have no data examining the effect of crowdfunding when fundraising was not successful. This was because many of these unsuccessful campaigns were either deleted or the organizations were abandoned (or rebranded). Analysis of failed campaigns lent itself more to qualitative analysis in order to accommodate the diverging circumstances of the various organizations; a stream of research we encourage in the future. Finally, social media sentiment may not be considered as a valid measure for organizational image, however, we believe it provides a real-time, and valid estimate of public opinion.

6 Chapter Six – Conclusion

6.1 Chapter Introduction

The aim of this chapter is to examine the overall findings of the individual research papers that have been presented and consolidate it into contributions that this thesis makes to both research and practice. First, I restate the purpose and aim of each research paper. Next, a summary of the individual contributions from each paper will be presented. The section following this will build on these studies and present the thesis-level contributions of my research. Next, I will consider the limitations of my research. After this, I will consider how the contributions and limitations have several implications for future research. I will conclude by discussing the implications of this thesis for practice.

6.2 Purpose of Research Papers

As stated previously, the research objective of this thesis is to *identify key drivers of crowdfunding success and explore the social nature of crowdfunding*. To do this, a literature review was first required to build an understanding of crowdfunding and the research surrounding the topic. After our literature review, I conducted a number of quantitative studies, where multiple approaches were adopted in examining the social nature of crowdfunding.

The first research paper, presented in **Chapter 2**, is a literature review. The aim of this study was to build a comprehensive understanding of crowdfunding and to synthesize the different factors that can positively or negatively impact the success of campaigns. This literature review was done by searching for research papers published in journals ranked 3, 4, and 4* in two research disciplines; Information Management, and Entrepreneurship & Small Business Management. This study

identified some gaps in research which was leveraged in the quantitative studies following it.

The paper presented in **Chapter 3** examines the impact social media has on equity crowdfunding campaigns. This study differs from other papers that look at social media and crowdfunding, as it focuses more on social media use and engagement during the crowdfunding campaign. This study compares this outside platform information sharing, with the information that is shared with investors on the crowdfunding platform. The aim of this study is to identify if different funding behaviours emerge from investors receiving information outside of the crowdfunding platform compared to information shared through the platform itself.

Chapter 4 analyses the social network of the fundraiser, tracking it through the lifecycle of a crowdfunding campaign. The purpose of this study was to understand how a crowdfunding campaign's social network changes as the campaign progress, and if these changes have any impact on the overall funding of the campaign. In this study, I chose to analyse rewards-based crowdfunding campaign, as opposed to equity-based campaigns, because I wanted to extend my research into other types of crowdfunding.

Finally, **Chapter 5** examines a research gap identified in the literature review regarding the lack of attention on post-fundraising success. The primary aim of this study is to investigate the impact an equity crowdfunding campaign has on the public's perception of the company. As this paper is looking at the public's image of a company, I compared the sentiment of Facebook comments made by the general

public in the six months before crowdfunding, with the sentiment of comments made in the six months after campaign completion.

6.3 Paper Contributions

The papers in this thesis have made a number of individual contributions to both theory and practice. A summary of the theoretical and practical contributions of each study can be seen below in Table 6-1.

Table 6-1: Individual Contributions by Chapter

Chapter	Theoretical Contribution	Practical Contribution
2	Conceptualises crowdfunding success into several different measures, identifying factors that impact these measures of success.	Determines the most common predictors of success across the different types of crowdfunding.
3	Highlights the significance of hedonic funding – that backers invest in campaigns based on their identity.	Crowdfunding campaigns with higher social media use and social media engagement had a higher proportion of funding, suggesting social media and equity crowdfunding platforms play a complementary role.
4	Emphasises the importance of weak ties in enabling communities to form around crowdfunding campaigns.	Successful campaigns had a wider and less dense social network in comparison to those that failed. Crowdfunding campaigns that were funded early in the process had a large social media network established before launching the campaign.
5	Highlights how crowdfunding backers assume a vested interest in the company, as they move from external consumers to internalised members of the public.	Shows how crowdfunding campaigns with a high level of public participation can experience decreased sentiment after the campaign.

First, the literature review presented in **Chapter 2** produces a model that distinguishes between three types of crowdfunding success; fundraising, community,

and post-fundraising. This model also identifies the different qualities of crowdfunding campaigns that can impact these measures of success. This paper also contributes to practice by determining the most common predictors of success across the different types of crowdfunding.

Chapter 3 is a quantitative study into the impact of social media activities on equity crowdfunding campaigns, finding that crowdfunding platforms and social media platforms play a complementary role during fundraising. This paper shows that campaigns with higher social media use (e.g. more posts), and social media appropriation (e.g. Facebook 'Likes' and 'Shares'), are more likely to receive a higher proportion of funding than those with low social media activities. This study also highlights how this hedonic funding (overfunding) is a consequence of crowdfunding backers identifying with the fundraiser. Social media enables fundraisers to convey the identity of the company to the crowd, which allows the crowd to bond with the company, and fund based on personal rather than financial goals.

The study presented in **Chapter 4** explores the social network of a selection of rewards-based crowdfunding campaigns as they progress. Our findings illustrate differences in the networks of campaigns that successfully reach their targets in the early, middle, or late stages of the fundraising window. The primary contribution of this study highlights the importance of creating weak ties, as successful campaigns have a wider and less dense social media network. Another contribution of this study highlights the importance of establishing a strong and wide network before launching a campaign, as those campaigns that did, reached their target early in the campaign.

Chapter 5 looks to examine the impact that an equity crowdfunding campaign has on the organizational image of the company. One of the primary contributions of this study shows demonstrates that campaigns with a high level of comments from the public see a drop in sentiment after the campaign. This suggests that an excessive amount of investor commenting can be a sign of discontent with an organization. This study also highlights how a crowdfunding campaign can alter the relationship between the company and the public, as investors transition from external customers, to internal stakeholders in the company.

6.4 Thesis Contributions

In this section, I will illustrate the main contributions of this thesis. The contributions of this thesis will provide valuable insights to both researchers and practitioners with an interest in crowdfunding as an alternative source of finance. The thesis contributions presented here are in keeping with the research objective, to *determine key drivers of crowdfunding success and explore the social nature of crowdfunding*.

First, this thesis states that crowdfunding success must be measured through the lifecycle of a crowdfunding campaign, and not only by whether it achieved its fundraising target. In order to fully understand the success of any crowdfunding campaign, you need to look at that campaign before it launched, during fundraising, and after. This is one of the most important contributions of this thesis to both research and practice. This contribution tells researchers that crowdfunding success is not about reaching a funding goal, but also needs to be considered in terms of before and after a campaign. For practitioners, this contribution highlights the

importance of not only preparing for a crowdfunding campaign, but the impact crowdfunding backers can have on your company after the campaign.

Next, my research demonstrates how crowdfunding must be considered a social collaboration, rather than a transaction between a consumer and a fundraiser. This contribution is significant as it expands our theoretical understanding of crowdfunding backers, showing how they invest based on identity, form communities around campaigns, and feel part of the company they invest in. While there are studies that examine crowdfunding using social identity theory (Kromidha & Robson, 2016), social capital (Gleasure & Morgan, 2018), and organisational image (Bretschneider & Leimeister, 2017), to the best of my knowledge this is the first time that these have been brought together to explain crowdfunding as a social collaboration. This contribution is crucial in expanding our theoretical understanding of crowdfunding and backers compared to traditional financing.

Third, this thesis states that crowdfunding campaigns need to use social media in order to spread their idea, engage with the crowd, and maintain this social collaboration. By analysing the impact social media has on crowdfunding, the thesis discovers some key factors that can impact the overall success of a campaign. While these studies are not the first to link social media activities to crowdfunding success (c.f. Mollick, 2014; Skirnevskiy et al., 2017), this contribution is important as it extends these studies by highlighting the importance of engaging with the crowd to maintain social collaboration.

Finally, my research draws attention to some interdependencies that exist in crowdfunding, and how they impact success. This contribution is important for researchers and practitioners to understand that the combined effect of two or more

variables can be greater than one. For future research into crowdfunding, it calls out the need to dig deeper into the data, even when initial analysis suggest results are unremarkable. Table 6-2 below illustrates the four thesis contributions, and how this extends our existing knowledge.

Table 6-2: Thesis Contributions

Contribution	**Extends Knowledge**
Crowdfunding success must be measured across the project's lifecycle.	Shows how crowdfunding success is not just reaching the funding goal, and needs to be looked at in different ways.
Crowdfunding is more successful when understood as a social collaboration, rather than a transaction between consumer and fundraiser.	Expands our theoretical understanding of crowdfunding and crowdfunding backers.
Crowdfunding campaigns need to use social media to maintain this social collaboration, in order to spread their idea and engage with the crowd.	Discovers cross-platform effects that exist between social media use and the success of crowdfunding campaigns.
Crowdfunding campaigns need to take into account that social media activities impacting crowdfunding success are both linear and interdependent.	Informs researchers and practitioners that it is not just about getting people involved on social media, but how they are involved can impact success.

6.4.1 Crowdfunding Success Must be Measured Across all Stages of the Campaign Lifecycle

The first contribution builds on previous studies that highlight the different phases and lifecycle of crowdfunding campaigns (Y. Chen et al., 2018; Crosetto & Regner, 2018). I show that crowdfunding success should be measured across the project's lifecycle, and not only whether the campaign reaches its goal or not. Figure 6-1 below details the different stages of crowdfunding campaigns that were analysed in our studies, along with the findings for each and what chapter they are related to.

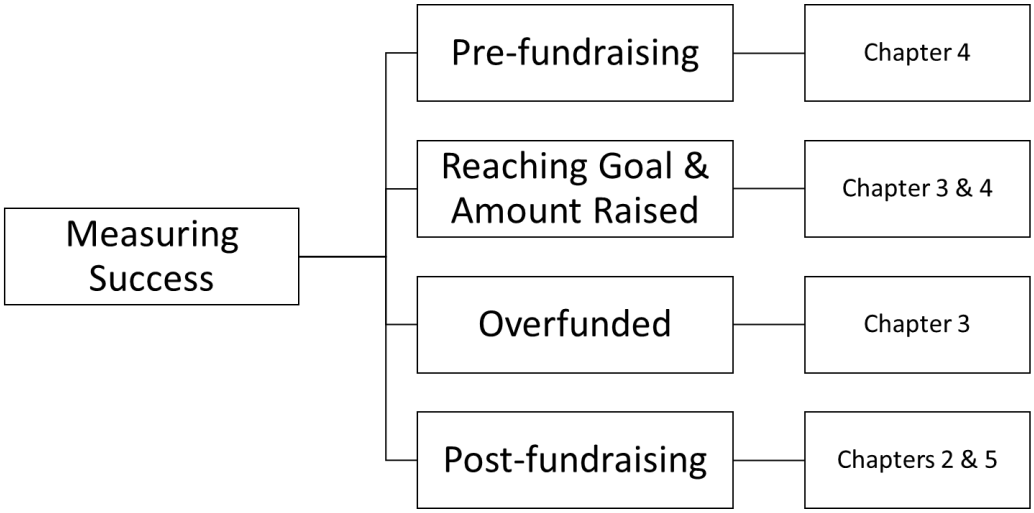


Figure 6-1: Measuring Success through the Crowdfunding Lifecycle

Chapter 4 finds that the existence of a large network before launching a campaign will increase the chance of reaching its funding target. This suggests that crowdfunding campaigns must also be analysed in terms of how successfully they can prepare to launch their campaign. This study extends previous research that looks at the importance of early backers (Colombo et al., 2015; Vismara, 2016b; Vulkan et al., 2016), by looking at the company's following before launching the campaign.

Consistent with previous research, this thesis analyses crowdfunding campaigns that reach their goal (Allison et al., 2017; Parhankangas & Renko, 2017), and the amount they raise (Ahlers et al., 2015; Block et al., 2018). In **Chapter 3** it is seen that campaigns that convey information about their company to the crowd (Documents provided, Age of Company), are more likely to raise funds for their campaign. This also reinforces previous research (Ahlers et al., 2015; Han et al., 2018). **Chapter 4** compares the social media network of Kickstarter campaigns that reach their target with those that do not. Building on other research that explores the social network of crowdfunding campaigns (Hekman & Brussee, 2013; Vismara, 2016a), this paper

examines how the network of successful campaign changes over its duration, and compares it to the network of unsuccessful campaigns.

Chapter 3 presents a study that analyses how crowdfunding campaigns can exceed their fundraising goal. This study reinforces previous research that uses the proportion of funding as a measure of success (Feller et al., 2017; Vismara, 2016a; Zheng et al., 2014). Findings suggest that social media plays a complementary role with crowdfunding platforms, indicating that those campaigns that use social media are more likely to, not only reach their goal, but to overfund. These findings validate previous research which has shown cross-platform effects between social media platforms and crowdfunding platforms (Lu et al., 2014; Thies et al., 2014).

Finally, this thesis highlighted the importance of measuring the success of crowdfunding campaigns after fundraising. **Chapter 2** emphasised the lack of research examining campaigns after they have reached their goal, with only one study looking at the impact of crowdfunding post-fundraising (Datta et al., 2019). The paper presented in **Chapter 5** attempts to fill this research gap by examining how the success of crowdfunding campaigns after fundraising, in terms of public sentiment.

6.4.2 Crowdfunding is More Successful When it is a Social Collaboration

The second contribution of this research relates to our theoretical understanding of crowdfunding, and crowdfunding investors. This thesis describes how crowdfunding is more successful when it is seen as a social collaboration, rather than a transaction between consumer and fundraiser. Figure 6-2 below illustrates the use of three different social theories as a lens to study crowdfunding, to show how crowdfunding investors fund ventures based on their identity, form a community of shared

interests and norms around the campaign, and feel a certain ownership over the company they invest in.

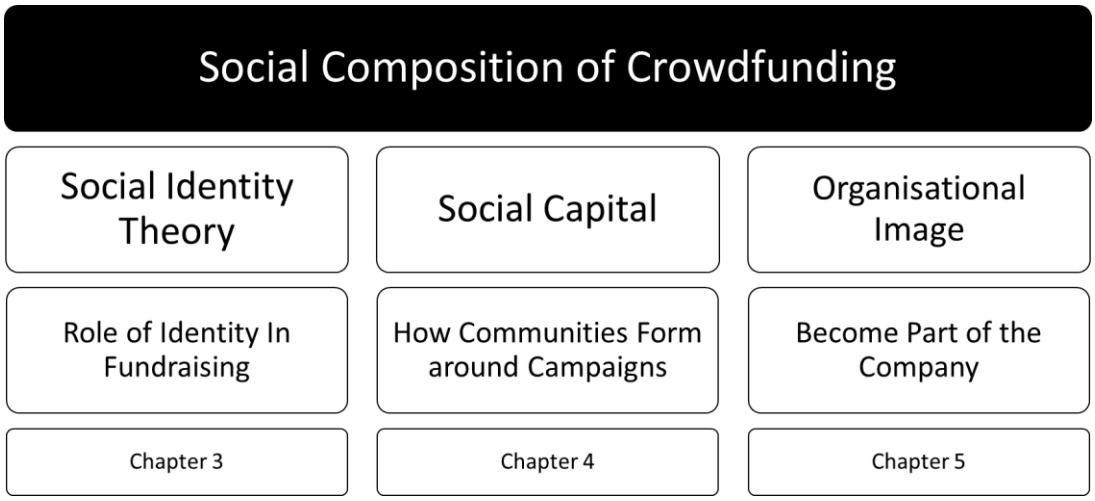


Figure 6-2: The Social Composition of Crowdfunding

The study presented in **Chapter 3** leverages Social Identity Theory to explore the role of identity in fundraising. By applying Social Identity Theory in an equity crowdfunding context, this study builds upon previous research that has examined the role of identity in crowdfunding (Aaker & Akutsu, 2009; Feller et al., 2017; Gerber & Hui, 2013), and more specifically, those that use Social Identity Theory (Kromidha & Robson, 2016; Muller et al., 2014). The findings from this study suggest that identity is a considerable motivation for investing in campaigns, where individuals are more likely to support campaigns that they identify with. It is through social media that fundraisers can convey their own identity to the crowd, leading to a more passionate crowd of backers.

Building on the finding that it is through social media where backers come across crowdfunding campaigns, **Chapter 4** presents a study that examines how these backers come together on social media to form a community. This study uses Granovetter's 'strength of weak ties' theory that highlights how weak ties bind

together more distant parts of a social network (Granovetter, 1973), connecting individuals who have few other connections in common. In relation to crowdfunding, this paper shows how it is important for campaigns to grow these weak ties, to allow information to flow between distant populations that have not seen the campaign. Over time, these weak ties grow stronger, allowing a passionate and energetic community to form around the campaign and the company. While several studies use Social Capital to examine crowdfunding (Colombo et al., 2015; Giudici et al., 2018; Gleasure & Morgan, 2018), this study validates research that shows the important role weak ties play in funding a crowdfunding campaign (Buttice et al., 2017; J. S. Hui, Gerber, et al., 2014).

Finally, after highlighting how crowdfunding communities grow around a campaign on social media, **Chapter 5** uses theory on organizational image to illustrate how these communities move from external customers to internalised members of the public. This paper uses literature on organizational image from both marketing and management disciplines. While marketing literature describes image as an external individual's belief about an organization (Dichter, 1985; Dowling, 2004), management research views image as how internal members believe others view their organization, or 'construed external image' (Dutton et al., 1994). Using this literature, and building upon previous crowdfunding literature related to image (Bretschneider & Leimeister, 2017; Gleasure, 2015), this study illustrates how as backers invest in campaigns, and the community grows, they become part of the company, assuming a vested interest and some sense of control over the company.

6.4.3 Social Media is Key to Maintaining this Social Collaboration

The third contribution of this thesis presents an analysis of the relationship between social media and crowdfunding, showing that crowdfunding campaigns need to use social media to maintain this collaboration with its backers. This contribution identifies several cross-platform effects between social media and crowdfunding, showing how they impact the different success measures of campaigns. Figure 6-3 below details how my research has examined crowdfunding, identifying three ways in which fundraisers can increase their success through social media.

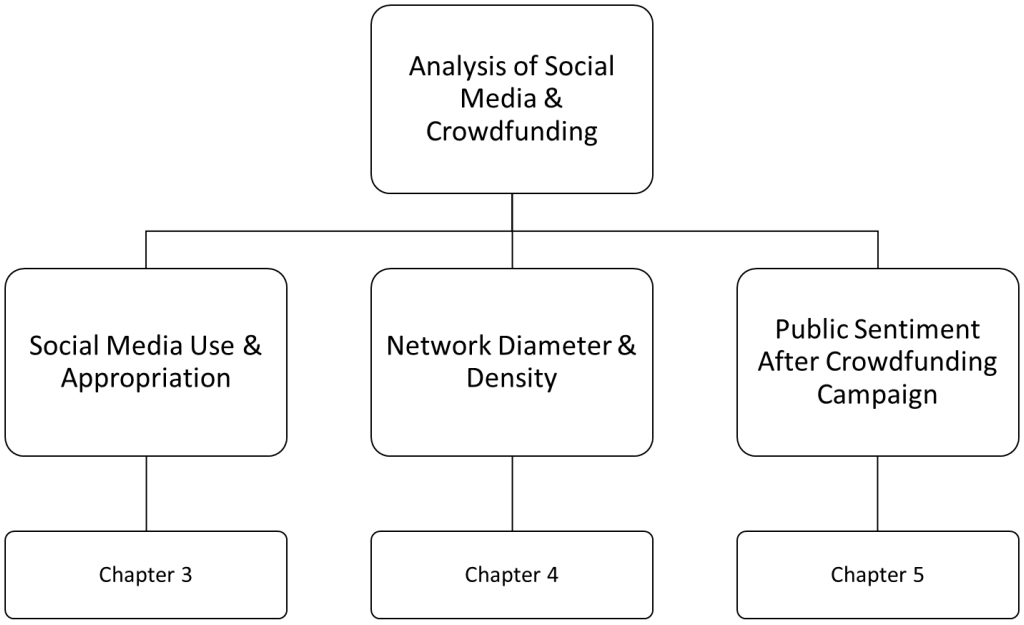


Figure 6-3: Analysis of the Relationship between Social Media & Crowdfunding

Chapter 3 presents a study into the relationship between social media and equity crowdfunding. While there was research that already looked at this relationship, it primarily focused on the number of friends, or followers, that campaign had on social media (Mollick, 2014; Piva & Rossi-Lamastra, 2018; Skirnevskiy et al., 2017). Instead, this study analyses how often these campaigns are posting Facebook and Twitter, and how their followers are interacting with those posts. Findings reinforce previous research showing both a higher number of social media posts (Lukkarinen et al.,

2016), as well as more Facebook 'Likes' and 'Shares' (Kromidha & Robson, 2016) can lead to a higher proportion of funding. Through adding another social media (Twitter) to the analysis, this study both validates and extends research by Kromidha and Robson (2016).

In **Chapter 4** I analyse the social media network of several rewards-based crowdfunding campaigns on Kickstarter. In this study, Twitter is used to track the social media network of these Kickstarter campaigns, showing that campaigns are more likely to reach their goal with a wider (more connections), and less dense (weak connections) social network. The findings from this study reinforce other research that shows more successful campaigns have a sparse and diverse Facebook network that is less dense (Hekman & Brussee, 2013). This study also extends this research, by analysing the campaigns through the lifecycle of the campaign, showing how these social network change as the campaign progresses.

Chapter 5 examines post-fundraising success, looking at the change in public sentiment on social media after a crowdfunding campaign. This study finds that crowdfunding campaigns with a very active social media page, in terms of comments from the public, public sentiment decreases after the campaign. This decrease in sentiment after the campaign, along with a high number of comments from the public, could signal a problem with the start-up. This extends previous research looking at the sentiment of comments from the public (Courtney et al., 2017; Davis et al., 2017; J. J. Xu & Chau, 2018), by examining these comments post-fundraising.

6.4.4 Social Media Activities Around Crowdfunding Should Not be Considered Only in Linear Terms

The final contribution of this thesis highlights some interdependencies that exist in crowdfunding, suggesting that it is not just about getting people involved on social media, but how they are involved can impact success. This contribution will inform researchers and practitioners of how the combined effect of two or more variables can often impact success measures more than the individual variables on their own. Figure 6-4 below illustrates the interaction effects that were found, and the chapters they relate to.

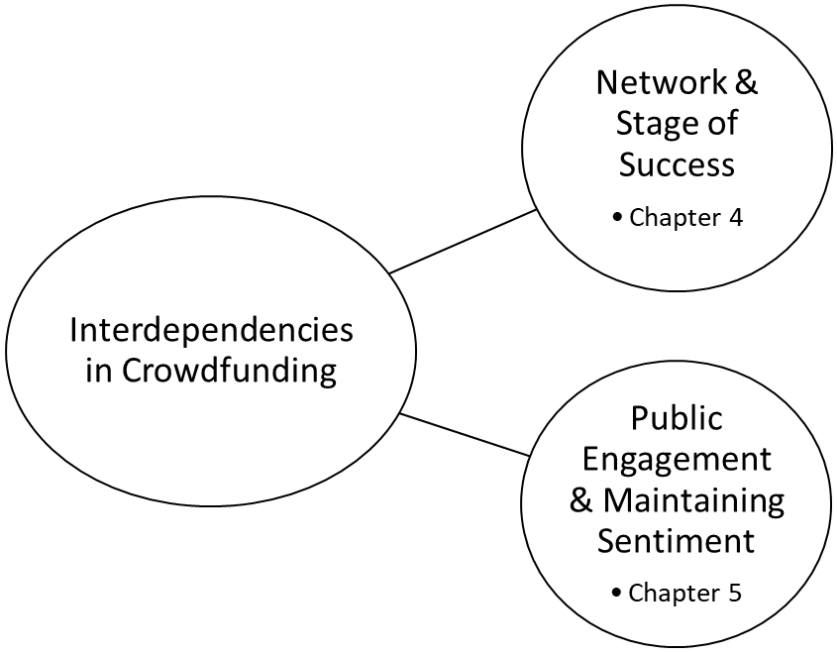


Figure 6-4: Interdependencies in Crowdfunding

Chapter 4 presents a number of interesting interdependencies between the responsiveness, diameter, and density of the network with the stage the campaign was funded. In particular, campaigns that reached their target goal within the first 3rd of the campaign's duration. This study found that throughout the crowdfunding process, these campaigns that were funded early had a social network with a wide

diameter (more connections) and low density (weak connections). While this allowed them to reach more potential investors, these campaigns also had a highly responsive following (% of Tweets from the public). This study extends previous research that highlights how campaigns can be funded at different stages (Y. Chen et al., 2018; Crosetto & Regner, 2018), by investigating if changes in the campaign's social network can predict when they will reach their goal.

Another interdependency is seen in **Chapter 5** when examining the sentiment of the public after crowdfunding campaigns. As discussed in the previous section, this study shows that crowdfunding campaigns with a high level of comments from the public experienced a decrease in sentiment in the six months after the campaign. However, through analysing interaction effects with other variables, this study found that companies were able to maintain a positive public sentiment by posting more, and replying to the public's comments. Organizations are forced to become more positive in order to maintain the tone on their social media, otherwise, investors will become disinterested and prone to decreasingly positive commentary. This study builds on previous research that suggests how entrepreneurs manage their public image is crucial to their success (Baron & Markman, 2003; Nagy et al., 2012).

6.5 Limitations

While the research presented in this thesis has made significant contributions to both research and practice, I also acknowledge that certain limitations will arise and must be taken into account. First, the quantitative studies in this thesis focus solely on equity crowdfunding and rewards-based crowdfunding. After the literature review, I decided to only examine equity crowdfunding as it was the newest and least

researched area of crowdfunding, however, I also found certain areas of rewards-based crowdfunding that were under-researched. I recognise that this thesis focuses only on two forms of crowdfunding, and only one platform for each type, meaning that findings can only be theorised for these platforms, and cannot be generalised to other platforms with different features and designs.

Second, consistent with the post-positivist epistemology adopted, I concentrated on undertaking quantitative studies through the thesis. Additionally, I focused primarily on quantitative research because when I began my research the majority of equity crowdfunding research was legal analysis focusing on regulations (Fink, 2012; Hornuf & Schwienbacher, 2016b). In comparison to studies examining other types of crowdfunding, such as rewards-based or charity, there was very little quantitative research. Because of this, I wanted to contribute to the growing body of literature that quantitatively examined equity crowdfunding, while also providing new insights into rewards-based crowdfunding. I acknowledge that since beginning my thesis this area an experienced significant research and development, with many high-quality quantitative studies on equity crowdfunding emerging (c.f. Block et al., 2018; Courtney et al., 2017; Mahmood et al., 2019; Piva & Rossi-Lamastra, 2018; Vismara, 2016a). I also recognise that there are a number of other ways to research crowdfunding using both qualitative and design science approaches.

From the literature review presented in Chapter 2, I found that the best theoretical approach to examine the social composition of crowdfunding would be to focus on social theories such as Social Identity Theory and Social Capital, as a lens to examine crowdfunding. These theories were chosen because they provided a basis to

understand what motivates backers to choose certain campaigns, and how these communities come together to fund ventures. It also made sense to use these social theories as we were primarily focusing on how groups act on social media. I recognise that there a wide range of other theories that could also be employed in these studies when examining crowdfunding. For example, other studies have employed theories such as Signalling Theory (c.f. Courtney et al., 2017; Kromidha & Robson, 2016; Thies et al., 2018), Motivation theories (c.f. Bretschneider & Leimeister, 2017; Choy & Schlagwein, 2016), and Herding behaviour (c.f. Mohammadi & Shafi, 2018; J. Zhang & Liu, 2012).

6.6 Implications for Future Research

With regard to the thesis contributions, there are several potential avenues for future research. This thesis first highlights that crowdfunding success needs to be measured across the lifecycle of a campaign. The primary implication for future research from this contribution is to draw attention to the importance of measuring the success of campaigns post-fundraising. As seen from our literature review, we found only one study that looks at the impact a crowdfunding campaign has on a company (Datta et al., 2019). Many of these campaigns that successfully raise money can still ultimately fail. Rewards-based campaigns can fail to deliver products, debt-based campaigns can default on the loans, and equity-based campaigns can collapse and lose the support of backers. Consequently, future research should focus on post-fundraising success, examining how successful campaigns are in terms of retaining the backing of the crowd, or in delivering products or financial gain to backers.

The next contribution discusses the social nature of crowdfunding, and how through a number of different theories we discovered that crowdfunding is a social collaboration between backers and fundraisers. For future research, the primary implication is that these crowdfunding investors fund based on their identity, forming a strong community around the company they back, which they feel part of. These findings are important for research as it highlights unique aspects of crowdfunding investors. I would encourage any future research to take a qualitative approach into examining the behaviours of crowdfunding investors, and what motivates them to back a campaign they come across on social media.

This thesis also presents an analysis of the effects social media has on crowdfunding campaigns. Through quantitative studies, several factors were found that impacts the success of crowdfunding campaigns. These findings have important implications for research, as future analysis of the impact of social media on crowdfunding campaigns may need to take into account these factors, and used as control variables. To extend the findings in this thesis, I would encourage future research to examine other forms of crowdfunding, such as debt-based, and investigate if the results remain consistent across all forms of crowdfunding.

Finally, the last contribution of this thesis highlights interdependencies that exist both during, and after crowdfunding campaigns. In relation to future research, this contribution emphasises how two or more variables might have a greater effect together on the dependent variable, findings that may not emerge without a deeper examination of the data. For example, in Chapter 5 I set out to examine if public sentiment changed after a successful crowdfunding campaign. Initially, the results

indicated that there was very little change in sentiment after crowdfunding, however, after further investigation through analysis of the interaction effects of certain variables, I found some significant effects with implications for both research and practice.

Recognising the limitations of this thesis from the previous section, there are several ways future research could compensate for these shortcomings. First, while this thesis examined both equity crowdfunding (Crowdcube), and rewards-based crowdfunding (Kickstarter), future research could examine different equity and rewards-based platforms, as well as charity and debt-based crowdfunding campaigns, to investigate if the findings in this thesis remain consistent across these models of crowdfunding. As well as these four types of crowdfunding models (Gleasure & Feller, 2016b), new types of crowdfunding are emerging that need to be researched and understood. For example, Patreon is a new take on the rewards-based model, which allows backers to subscribe to a creator or artist with a monthly subscription. The findings in this thesis that suggests backers give money based on identity, and not for financial gain, could be useful for further research into Patreon, as many backers on this site give money to creators while receiving the same content as those who do not donate to the creator. Second, as my research is predominantly quantitative studies, future research into crowdfunding could extend my research using qualitative techniques. For example, researchers could interview entrepreneurs to examine if the impact social media use had on attracting new investors, or through surveying investors, researchers could investigate investors who become aware of the campaign through social media, and what are their motivations for investing in it. Finally, in relation to only using social theories in my

research, future research could use alternative theories and investigate if they could formulate the same hypotheses, and eventually confirm or challenge the findings.

6.7 Implications for Practice

This thesis also has a number of implications practice, primarily for entrepreneurs and start-ups who are attempting to use crowdfunding to secure funding for their project or venture. First, this thesis underlines the social nature of crowdfunding, suggesting that it is a collaboration between fundraisers and backers. For entrepreneurs, start-ups, or anyone looking to use crowdfunding to raise money for their venture, they need to realise that it is not just a transaction between a company and consumer, but an on-going interaction with a community of passionate backers, who identify with the campaign, and feel part of the company they invested in. In my opinion, it is important for campaigns, particularly equity-based projects, to realise that these passionate crowdfunding investors can become customers, who will enthusiastically support the company and share it among their friends and family.

Next, as crowdfunding is heavily influenced by this social interaction, fundraisers need to use social media to engage with the crowd and spread their project with people who might not normally come across it. Fundraisers need to realise the importance of weak ties in their social network, encouraging their existing network to share the project, while also reaching out to new communities to reach more potential investors. This thesis also highlights to entrepreneurs the importance of creating engaging social media content, as it can lead to a campaign overfunding.

Finally, along with new insights into the effect of social media on crowdfunding, this thesis provides fundraisers with a comprehensive view of the factors that can both

positively and negatively impact the outcome of a campaign. Findings from the three quantitative studies, along with the literature review of success factors provided in Chapter 2, identifies a number of characteristics of a crowdfunding campaign that predicts the different dimensions of success. Fundraisers need to be aware that success is not only achieved through raising money and reaching the funding target, but should also be realised through building a strong community and maintaining this community after fundraising. This thesis also breaks down these success factors by type of crowdfunding. In my opinion, this gives crowdfunding campaigns the ability to tailor their crowdfunding strategy by focusing only on the characteristics most prominent in predicting the success in the type of crowdfunding they are participating in. For example, for a company launching an equity crowdfunding campaign, this thesis has shown that investors pay close attention to characteristics such as the size of the team involved (Vismara, 2016a), the education and experience of the team (Piva & Rossi-Lamastra, 2018), and as shown throughout this thesis, the social media activities of the company.

6.8 Summary & Conclusion

Through a thorough literature review and a selection of different quantitative methods, I have developed a rich understanding of crowdfunding as a social collaboration, as well as the factors and characteristics that can impact its success across its lifecycle. In this chapter, I first restated the purpose and aim of each research paper. After this, I highlighted the individual contributions from each of the chapters presented in the thesis and synthesised these into a number of thesis contributions. Next, I acknowledged the limitations that exist in the research and then stated how the contributions and limitations have implications for future

research. Finally, I presented the implications this thesis has for practitioners, such as entrepreneurs and crowdfunding platforms.

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8 Appendix

8.1 Cutter Prediction Article

This article was published in the Cutter Business Technology Journal Vol.31, No.1 (Nevin & Gleasure, 2018). This is an industry-focused journal, dedicated to helping organizations leverage emerging technologies. I was asked to provide an article for their 2018 Business Trends and Predictions, giving my opinion on the recent growth of Initial Coin Offerings, compared to crowdfunding. I discuss the rise in popularity of ICOs, and whether they can continue to grow in 2018, as rapidly as they did in 2017. I suggest that ICOs will continue going through periods of hype-fuelled speculation in the short-term, but the long-term growth will require both legislation and integration with current crowdfunding models. This article gave me a chance to step away from academic-focused papers, and instead develop a speculative report for industry.

8.1.1 Crowdfunding's Friend or Foe?

Since the global financial crisis, individuals are taking more control over their personal finances and investments. Investors are now looking for alternative oppor-tunities outside of traditional investment strategies. With the passing in the US of Title III of the Jumpstart Our Business Start-ups (JOBS) Act, equity crowdfunding was made available to the general public. Equity crowdfunding enables almost anyone to act like a venture capitalist, allowing people to invest in private start-ups in return for a stake or equity in the company. The crowdfunding market has been growing steadily in recent years. In 2012, total crowdfunding volume was US $2.7 billion, rising every year to $34.4 billion in 2015.

The year 2017 saw the extraordinary growth of a new form of crowdfunding, initial coin offerings (ICOs). ICOs, also known as token sales or crowdsales, are a funding

mechanism where a virtual coin or token (cryptocurrency) is sold to investors to raise capital for a new company. Depending on the terms of the ICO, the token sold can represent either an investment security or a form of currency within a company's application. Like a crowdfunding campaign, an ICO takes place over a given period, and anyone can buy the coins or tokens in question in exchange for other cryptocurrencies such as Bitcoin or Ethereum.

The rise of ICOs has been rapid and unprecedented (see Figure 8-1), far exceeding that of crowdfunding. According to Coinschedule, 46 ICOs raised a total of $96 million in 2016, while in 2017 there were more than 230 ICOs raising more than $3.5 billion, with projects such as Filecoin ($257 million) and Tezos ($232 million) contributing to ICO growth. In just one year, ICOs have raised more than the most popular crowdfunding platform, Kickstarter, has in its eight-year history.

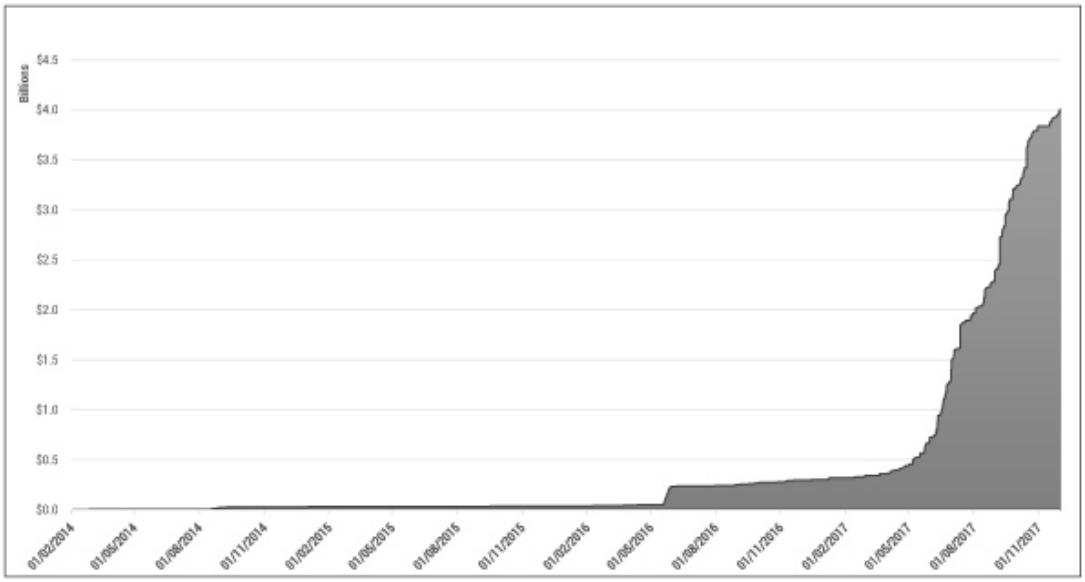


Figure 8-1: All-time Cumulative ICO Funding (Source: Coinschedule)

We are already seeing well-established crowdfunding platforms pay attention to ICOs. Indiegogo, a successful rewards-based crowdfunding platform, announced it

would begin offering services to blockchain-based projects that seek to undertake an ICO. Indiegogo's size and influence in the crowdfunding ecosystem will be a huge benefit to companies looking to undertake ICOs. Significantly, Indiegogo will handpick projects and help start-ups comply with SEC regulations.

As shown in Figure 8-2, there has been a significant shift in interest in the two forms of alternative funding. Toward the end of May 2017, interest in crowdfunding decreased slightly, while interest in ICOs rapidly rose. During this time, ICOs were happening frequently, and with much more success than they had previously enjoyed. According to Coinschedule, there were 98 ICOs in 2017 that raised over $10 million, with 83 of them taking place after May of that year. In comparison, there were only five traditional crowdfunding campaigns in 2017 that raised over $10 million, with only one finishing funding after May, and four still ongoing.

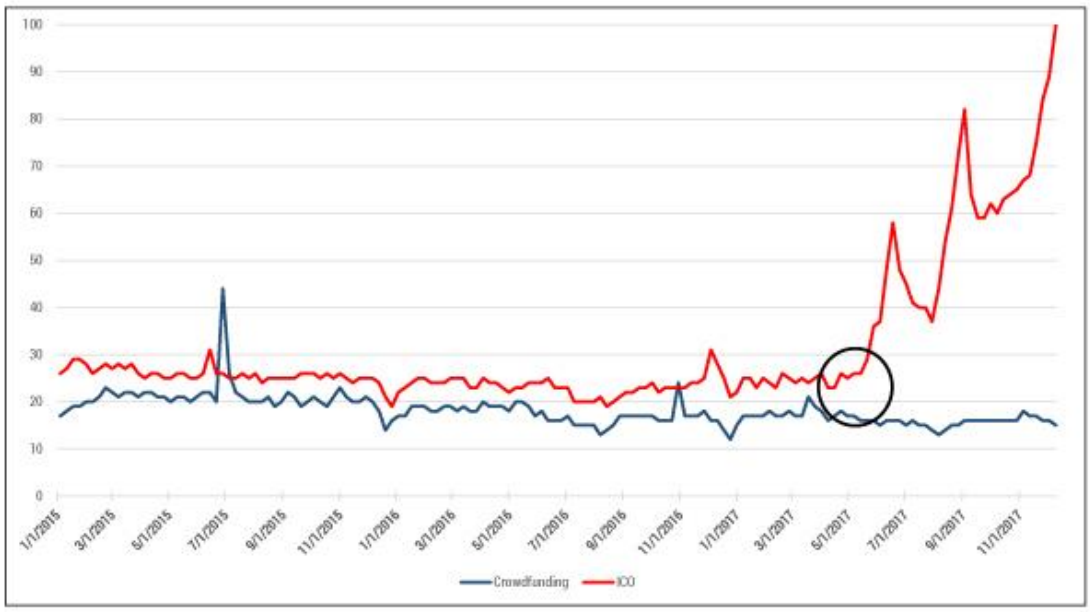


Figure 8-2: Crowdfunding vs. ICO: Interest over the Past Three Years (Source: Google Trends)

Maecenas, a London-based fine art investment platform, provides an example of this move in interest. In April 2017, Maecenas launched a crowdfunding campaign with Seedrs, with a target of £400,000, giving 12.4% equity to the crowd, but the campaign was not funded, and the project failed. However, in September, Maecenas released a white paper and began funding through an ICO. Within a month, with the ICO complete, Maecenas had raised over 50,000 Ether, with a value of $15.5 million. So a crowdfunding campaign that failed to raise £400,000 on Seedrs was able to raise 30 times that amount through an ICO only a few months later, while also giving away less equity.

The upward trend of popularity in ICOs after May 2017 is quite interesting. As Figure 8-2 illustrates, when interest in ICOs rose, there was a slight decrease in interest in crowdfunding. This suggests that ICOs may be capturing some of the crowdfunding market, with crowdfunding investors moving to fund blockchain-based start-ups.

Another interesting trend over time relates to the peaks of highs, followed by a drop in interest, which line up with the percentage of ICOs that reach their funding goal. As reported by Architect Partners, there was a peak of interest in June 2017, which also saw 92% of all ICOs reach their funding target. A dip in interest followed in August, which showed a funding success rate of 46%.

In the short term, this trend looks likely to continue, with ICOs going through periods of hype followed by a phase of low interest. These oscillations are likely to continue into 2018, as periods of hype encourage investors to move away from crowdfunding in favour of ICOs. However, in the long term, ICOs are likely to grow in tandem with crowdfunding. This complementary growth will be achieved only when crowdfunding platforms and traditional funding players become involved. This is already starting to happen, with crowdfunding platforms such as Indiegogo, Republic, and AngelList having expanded into the ICO market. With venture capitalists also coming on-board, the experience and expertise of these traditional actors will help weed out projects that don't have what it takes to succeed or that may be fraudulent.

As the year progresses, we expect to see several hype-fuelled projects fail to meet expected deadlines. This will drive traditional crowdfunding investors back to the more stable and reliable crowdfunding platforms, where levels of success and failure are spread among large numbers of companies. Crowdfunding investors will return to ICOs when regulation is put in place and demonstrably trustworthy intermediaries become involved.

The clustering of intermediaries among ICOs has allowed the paradigm to grow rapidly while also meaning that oscillations in public interest are inevitable. The ICO

market will ultimately require legislative change like that imposed on crowdfunding. Further into 2018, we will see that ICOs will no longer be able to get funding with only a white paper. Investors will no longer blindly fund any ICO but will instead demand business plans and high levels of transparency.

8.2 OpenSym 2017 - Social Identity and Social Media Activities in Equity Crowdfunding

This full paper was published in the proceedings of the 2017 International Symposium on Open Collaboration (OpenSym), a peer-reviewed conference which was held in the National University of Ireland, Galway (Nevin et al., 2017b). This is an annual conference dedicated to open collaboration research and practice. This paper built upon a previous research-in-progress paper (Appendix 8.3), to explore the effect social media use and engagement has on the overall funding of equity crowdfunding campaigns. The feedback received through the peer-review, and at the conference itself, allowed me to build upon this paper, leading to the paper presented in **Chapter 3**. This chapter extends the theories, hypotheses, research model, and data that were presented at the OpenSym conference.

8.2.1 Abstract

The existence of crowdfunding platforms has helped creators to bring their innovative products to market. In recent years, equity crowdfunding has increased in popularity as an alternative form of finance, and has helped thousands of innovating entrepreneurs to raise money, and join a broader conversation with large numbers of potential investors. Early-stage start-up investment is no longer restricted to venture capital firms and high net worth angel investors. Using Social Identity Theory (SIT) as a basis, we look at a sample of crowdfunding campaigns from the UK-based platform, Crowdcube. In this study, we are trying to understand how groups of potential crowdfunding investors act in relation to the social media activities of those campaigns. We examine how different social media activities can have an impact on the funding of a crowdfunding campaign. This study has significant implications for

fundraisers who want to utilize social media to increase their chances of a successful crowdfunding campaign. In our study, we identify that by being more active on social media and having a higher level of engagement with the crowd, this will have a positive impact on the overall funding of a crowdfunding campaign.

Keywords: Crowdfunding; Equity Crowdfunding; Social Identity Theory; Social Media; Crowdcube.

8.2.2 Introduction

Open innovation was first coined by Henry Chesbrough in 2003, where he described it as combining internal and external ideas to advance the development of new technologies (Chesbrough, 2006). Crowdfunding platforms enable this openness between the companies who are raising money, and the crowd who may become backers. Companies that actively seek out ideas from the crowd, and are open to insights from backers can really utilize the value of the crowd and create innovative products (Stanko & Henard, 2016). The process of launching a crowdfunding campaign is also a co-creation process. When a crowdfunding project is presented to a crowd of potential backers, the result of whether it is funded or not, is a market test (Assadi, 2015). The provision of funds can be seen as a much stronger commitment to the project than results seen in a questionnaire or a survey.

According to the Massolution Industry Report, total equity crowdfunding volume worldwide was $2.56 billion. That number has been roughly doubling each year since 2012. While data is not yet available, this report also projects this figure to be near $4 billion (Massolution, 2015). Based on these numbers, Forbes projects that equity

crowdfunding may well surpass standard venture capital models by 2020 (Barnett, 2015).

Compared to other types of crowdfunding, there is relatively little empirical research on equity crowdfunding (Gleasure & Feller, 2016b). Some research discussed the potential of equity crowdfunding for returns (Schwienbacher & Larralde, 2010), however, the majority of the re-search in this area has been related to regulation and focused on the new inexperienced investors (Gleasure & Feller, 2016b; Stemler, 2013). These studies focused on the Jumpstart Our Business (JOBS) Act, a legal change that meant start-ups in the US could be funded by non-accredited investors. In the UK, the FCA's regulatory approach to crowdfunding as begun to open up the crowd of potential investors to everyone, not only high net worth individuals, or venture capitalists.

This study uses Social Identity Theory (SIT) to examine equity crowdfunding, and to show how identity in social media plays a key role in the engagement of fundraisers and potential investors. The first part of our study will describe crowdfunding, with a particular interest in equity crowdfunding. Next, we will move on to describe SIT, and how it could affect a crowdfunding campaign. We present a model and hypotheses of how different social media activities can affect the funding of a crowdfunding campaign.

We then examine data gathered from a crowdfunding platform, Crowdcube, and test our hypotheses against this data. Using this data and three key measures of social media activity (Social Media Usage, Social Media Appropriation, and Social Media

Selectivity); we discover that there is a positive impact between this and the proportion of funding a campaign will receive.

8.2.3 Crowdfunding

Crowdfunding comes from the concept of crowdsourcing, which involves utilizing a multitude of humans to gather ideas, and solutions to solve a wide variety of problems. First coined by Jeff Howe in the June 2006 issue of Wired magazine, he describes crowdsourcing as a new web-based business model that uses the creative solutions of a large network, through the use of an open call for proposals (Howe, 2006). However, long before the term was coined crowdsourcing was being used to create new products, and engage customers. In 1949, Pillsbury, a beloved baking brand, held a mail-in cooking competition, called Bake-off (Parvanta, Roth, & Keller, 2013). Customers would send in their recipes, and the best recipe would receive a prize. Pillsbury would create a cookbook with the best recipes, and send it to their customers, who received crowdsourced cooking tips. Like crowdsourcing, the idea of gathering money from a large network is not new. A very early example of crowdfunding occurred in 1884, when the pedestal for the Statue of Liberty was funded by Joseph Pulitzer through micro-donations by the American people (Bannerman, 2013). Online crowdfunding is relatively new, with new platforms such as Kickstarter and Indiegogo providing small to medium businesses with a new way to access capital.

According to a number of studies, (Belleflamme et al., 2014; Bradford, 2012; Gleasure & Feller, 2016b) there are four paradigms of crowdfunding. These four categories are:

1) Crowd Charity: With this type of crowdfunding, donors receive nothing for their contribution. This type of crowdfunding is used mainly by non-profit and NGO organizations to raise money. Charity crowdfunding platforms include Razoo, Crowdrise, and GoFundMe.

2) Rewards-based Crowdfunding: Here, backers typically contribute small amounts of money in exchange for benefits from a proposed product or service (e.g. provision of that product once it is developed). Kickstarter, PledgeMusic and Indiegogo are all platforms that enable rewards- based crowdfunding.

3) Debt-based Crowdfunding: This model is also referred to as peer-to-peer lending. Lenders give money to entrepreneurs or organizations, and expect repayment at some agreed upon time. Depending on the platform used, some lenders will receive interest, while others do not. Examples of peer-to-peer crowdfunding platforms include Kiva, Lending Club, and Funding Circle.

4) Equity Crowdfunding: This type of crowdfunding offers investors a stake (or equity) in the company in return for their funds. This form of crowdfunding is usually used to fund the launch or growth of a company. CrowdCube, Seedrs, and CircleUp are some of the most popular equity crowdfunding platforms.

In this study we will only focus on equity crowdfunding. We do this because we believe it represents a longer-term and more uncertain return for investors (Wilson & Testoni, 2014). We believe that equity crowdfunding is much more complex and ambiguous than rewards-based or peer to peer lending. Equity crowdfunding offers backers the opportunity to become more than just donors. Instead of fixed instant rewards with rewards-based crowdfunding, backers are given a share of the

company in return for their contribution (Griffin, 2012). These backers are looking to get a return on their investment in the form of future dividends, company sale, or a public offering. In a short period of time equity crowdfunding is becoming more important in the world of finance. However, much of the research surrounding equity crowdfunding has been legal literature about protecting the new investors, and research focused on the laws and regulations in different countries of equity crowdfunding (Gabison, 2015; Stemler, 2013).

8.2.4 Social Identity Theory and Equity Crowdfunding

Social identity theory was introduced by Henri Tajfel and John Turner in the 1970s and 80s as a means of explaining intergroup behaviour (Tajfel & Turner, 1979). Social identity is a person's sense of 'whom they are', based on the social group to which they belong. SIT suggests a person does not have one 'personal self', but rather multiple selves and identities associated, each associated with different social groups in which they perform some particular role (Trepte & Krämer, 2007). Individuals perceive others as part of 'ingroups' with which they socially identify, or 'outgroups' with which they do not (McLeod, 2008). Central to this are shared norms and attitudes, which determine how members of an ingroup interact (Blumer, 1986; Mead, 1934). SIT has been applied to explain behaviours in a number of different domains, including why we choose entertainment media in accordance with certain group memberships (Trepte & Krämer, 2007), how we categorise ourselves in our organization context (Hogg & Terry, 2000), and how we make economic decisions that may appear irrational (Akerlof & Kranton, 2000).

There have been previous papers that have used SIT to research crowd behaviour and crowdfunding. It has been seen that a person's identity influences what people do and why they give (Gerber & Hui, 2013). Research has shown that fundraisers who are able to convey their personality and identity are more likely to succeed (Thies et al., 2016). Investors pay close attention to the project creators themselves, meaning fundraisers have to get their identity across to the investors in order to engage the crowd (Gleasure & Feller, 2016c). Most importantly for this study, SIT suggests that people will invest more of their personal time and effort to support ideas that resonate with their social identity (Aaker & Akutsu, 2009).

8.2.5 Hypotheses and Model

Social Identity Theory is used in this study as it describes how people act based on the groups they are part of. Figure 8-3 illustrates how three factors; social media usage, social media appropriation, and social media selectivity, influence the funding of a crowdfunding campaign. It also shows how these three factors have an impact on each other. Some research suggests that a company's social media activities help strengthen the bond between the customer and the firm and contribute to financial performance (Rishika et al., 2013). We want to take this further and see if these social media activities can have an impact on funding for a crowdfunding campaign.

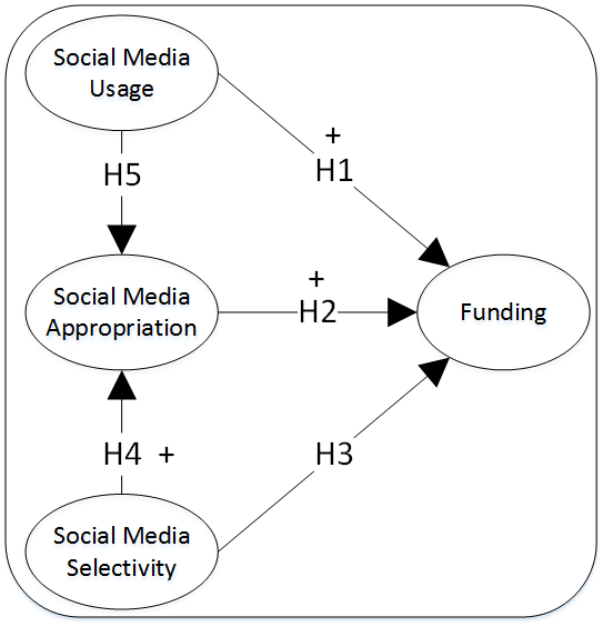


Figure 8-3: Research Model for Studying Social Identity in Online Crowdfunding.

8.2.5.1 Social Media Usage and Funding

One of the most popular means of interacting with external stakeholders is through social media (Waters et al., 2009; H. J. Wilson et al., 2011). In relation to social identity, a company that regularly communicates and interacts with external parties via social media offers the crowd an opportunity to get to know what the company is about (Rapp et al., 2013). Social media use will enable companies to convey their identity to the crowd, and will be an opportunity for the crowd to understand and identify with that company. For example, a fundraiser can set up a Facebook page to engage the crowd even before they decide to use a crowdfunding platform. Studies have shown that the greater number of Facebook friends, the more successful a crowdfunding project is in terms of amount of money raised (Mollick, 2014). Thus, we hypothesise that companies who are more active on social media will have a positive impact on funding.

H1: *More Social Media Use will have a positive impact on Funding*

8.2.5.2 Social Media Appropriation and Funding

Social media appropriation refers to the level of engagement the crowd has with a company's social media posts. The number of Facebook "Likes" and "Shares" on their posts, as well as the number of "Retweets" and "Favourites" on their Tweets would all be examples of social media appropriation. In relation to social identity, social media appropriation will be a good measure of how engaged the crowd are, and how highly the company's identity resonates with the crowd. Highly engaging social media campaigns are likely to generate commitment on part of the consumer, reinforcing loyalty to the brand, and making the customer more likely to commit additional effort to support the brand in the future (Hoffman & Fodor, 2010). In this case, campaigns are looking to build brand engagement and hope to encourage potential investors to commit funds to their campaign. For companies to have a higher level of social media appropriation, they must carefully manage their social media (Rishika et al., 2013). For example, companies providing regular updates about events, sending personalised messages to individual customers, and encouraging member contributions can enhance form equity (Agarwal, Gupta, & Kraut, 2008). Research has also found that the fundraiser's ability to demonstrate their identity in larger social networks is associated with success (Kromidha & Robson, 2016). This measure of appropriation is a good way to show how well the fundraiser is demonstrating their identity to the crowd. Thus, we hypothesise that companies have a higher rate of social media appropriation, will have a positive impact on funding.

H2: *More Social Media Appropriation will have a positive impact on Funding*

8.2.5.3 Social Media Selectivity and Funding

The first route towards establishing specificity in a company's identity is the social media that company chooses to use. This selective use can tell a great deal about a company's social identity and whom they are targeting (A. M. Kaplan & Haenlein, 2010). In relation to social identity theory, companies could choose a specific social media over others, in an attempt to share their identity with specific groups of potential investors. Research suggests that a user's preference for choosing a social media, such as Facebook over Twitter, is related to the user's personality (Hughes et al., 2012). As a result, companies use different platforms depending on their target market (Stelzner, 2014). With the right social media management, this selective use, and targeting of specific groups could make their posts more interesting and more likely to have an interest in their crowdfunding campaign. However, as they become more selective, they are lowering the number of potential investors with whom they are interacting. This could have a negative impact on funding. Thus, we hypothesise that companies who are more selective on social media will have an impact on funding.

H3: *More Social Media Selectivity will have an impact on Funding*

8.2.5.4 Social Media Selectivity and Social Media Appropriation

Social media is particularly suited for collecting information/feedback from customers, initiating two-way conversations with customers and developing relationships through communication (Enders et al., 2008; A. M. Kaplan & Haenlein, 2010). By only focusing on specific social media, they align their social identity with those using those using that media. This would make their posts more interesting to those potential investors, and more likely to respond to their posts. Placing more

importance one group over another will make that group feel more empowered, and will make them feel like they will have a say in ongoing decision making (Clark & Mills, 1979). Thus, we hypothesise that companies who are more selective on social will have a positive on social media appropriation.

H4: *More Social Media Selectivity will have a positive impact on Social Media Appropriation*

8.2.5.5 Social Media Usage and Social Media Appropriation

It's clear to link social media use and social media appropriation. It is thought that the more you post on Facebook, or Twitter, the greater the level of response will be. As companies use social media to convey their identity, potential investors that identity with it will begin to respond. Here, this response will be in the form of Facebook 'Likes' and 'Shares', and Twitter 'Favourites' and 'Retweets'. However, too much social media usage could also have a bad effect on social media appropriation. In relation to social identity, posts that do not get across the company's identity to the crowd would be less interesting to those they are trying to engage with. This could lead to a lower response or engagement rate for their posts. Companies need to make sure each post is communicating their identity to the crowd.

H5: *More Social Media Usage will have an impact on Social Media Appropriation*

8.2.6 Data Collected and Research Method

8.2.6.1 Data Collection

In order to test the proposed research model, we gathered public data from an established equity crowdfunding platform, namely Crowdcube. Crowdcube is a UK-based online equity crowdfunding website that enables members of the general

public to invest in start-ups, early stage and growth businesses, alongside professional investors. Launched in 2011, Crowdcube has become one of the leading equity crowdfunding models, having raised over £195 million to fund over 460 campaigns. Crowdcube is growing at a rapid rate and is continuing to attract new members, currently with over 300,000 registered investors on the platform.'

Crowdcube was selected for two key reasons. First, Crowdcube is an established platform which has been operating for over five years at the time of writing. This means the dynamics of the platform are relatively mature and allows analysis to focus on completed campaigns, rather than trying to predict outcomes of ongoing fundraising. There have also been a number of high profile successes, creating a level of public awareness (hence, possible investor diversity). Companies like JustPark and Sugru have both raised over £3 million using Crowdcube. JustPark raised over £3.7 million from 2,900 investors in just 34 days. Sugru raised over £3.3 million, and did not just benefit from small investors, as a single investor dedicated £1 million. This was the largest single investment on the Crowdcube platform. In July 2015, E-Car Club was the first successful exit from Crowdcube. The company received a significant investment from Europcar, which meant that 63 original investors in E-Car Club via Crowdcube benefited from a multiple return on their investment.

Second, Crowdcube caters to investors of varying experience. Investors on Crowdcube are divided into four groups; 1) Everyday Investors, 2) Advised Clients, 3) Self-Certified Sophisticated, and 4) High net worth Investors. Both professional and non-professional investors can give as little as £10 to fund a company. Crowdcube is a good platform to test our hypotheses because it is one of the leading companies in

the equity crowdfunding space, with a diverse crowd made up of mostly new investors, but also many experienced investors.

It should be noted that Crowdcube has two basic models. The first is the debt-based, or bond, model. With this model you are giving a loan to a company in return for a fixed amount of interest every year. The second model, and the most popular on the platform, is the equity-based model, where investors give money in return for a share in the business. Consistent with the focus of this study, data gathering and analysis will focus on campaigns adopting the equity-based model.

We gathered information on 104 crowdfunding campaigns on Crowdfunding. This data included information such as Name, Target Amount, Amount Raised, Number of Investors, etc. We also gathered Twitter and Facebook data for 99 out of the 104 campaigns. 5 campaigns were left out of the study completely as we were not able to collect their social media data. The social media data collected included number of posts, number of Facebook 'Likes' and 'Shares, and number of Twitter 'Retweets' and 'Favourites'. The data gathered was between the company's incorporation date, and the date the company finished funding on Crowdcube.

8.2.6.1 Measures

For the first three of our hypotheses, we used the 'Funded' variable as our main dependent variable for our regression models. This variable was given by dividing the total amount funded by the target amount. This variable tells us the proportion of funding to a campaigns target. For all our tests, the social media data were extracted between two dates; the company's incorporation date, and the date that their

crowdfunding campaign ended. Figure 8-4 shows a snapshot of 27 crowdfunding campaigns from our dataset, focusing on their social media activity.

	Name	Twitter Handle	Tweets (Between Dates)	Retweets	Favourites	Facebook page_name	FB Posts (Between Dates)	Likes	Comments	Shares	Social Media Use	Social Media Response	Social Media Selectivity	Funding Finished
2	Rejuvenation Water	RejuvenationWtr	1181	3660	3196	rejuvenationwater	443	2325	339	475	2006	5.9458	0.4544	07/02/2017
3	Conquering Horizons Limited	victor_mobility	187	182	335	Victormobility	41	924	25	267	247	7.4312	0.6404	30/01/2017
4	Circuitree Energy Independence LTD	Circuitree23	85	58	75						85	1.5647	0.0000	19/01/2017
5	The Surrey Cook LTD	TheSurryCook	142	33	105	thesurreycook	26	237	7	44	168	2.4940	0.6905	18/01/2017
6	School Notices	school_notices	887	163	122	schoolnotices	689	5337	276	1343	1576	4.4194	0.1256	12/01/2017
7	Le Col Holdings LTD	officiallecol	1889	3245	3164	LeColClothing	639	5806	337	779	3119	5.1400	0.4945	07/01/2017
8	MyShowcase	myshowcase	7000	9973	8736	myshowcasenews	2311	22427	2565	14554	10535	5.9811	0.5036	06/01/2017
9	Hop Stuff Brewery	hopstuffbrewery	3931	3786	2837	hopstufflondon	1554	8736	861	1378	5903	3.0514	0.4334	23/12/2016
10	All By Mama	allbymama	11034	5731	8967	allbymama	1193	21900	3631	2549	12912	3.2017	0.8049	26/12/2016
11	Pedals London Ltd	pedals_delivery	407	106	346	pedalsdelivery	46	147	4	17	432	1.3538	0.7969	12/12/2016
12	Hurree	hurree_me	1049	225	351	Hurree.co	975	259	0	11	2024	0.4180	0.0366	10/12/2016
13	My Friends Room Limited	myfriendsroom	925	379	876	myfriendsroom	165	343	73	71	1090	1.5312	0.6972	06/12/2016
14	Raw Halo LTD	rawhaloUK	698	1300	1283	rawhalo	327	561	42	113	1307	3.1776	0.3620	30/11/2016
15	Fanny's Kebabs	fannyskebabs	2	0	1	FannysKebabs	12	95	6	6	20	7.2857	0.7143	28/11/2016
16	Rentivo	rentivo	1915	124	441						1915	0.2950	0.0000	27/11/2016
17	Bluebella	Bluebella	7744	13387	9223	OfficialBluebella	2417	17176	6294	3856	11048	4.2950	0.5243	25/11/2016
18	Mush	mushmums	618	225	633	mushmums	274	2514	175	566	1050	4.4148	0.3857	23/11/2016
19	Meetzo	meetzoapp	32	20	21	meetzoapp	12	484	2	17	44	12.3182	0.4545	22/11/2016
20	Solely Original	SolelyOriginal	305	51	202	SolelyOriginal	145	166	20	27	542	0.9311	0.3556	22/11/2016
21	British Boxers	Grandpajem	2973	3429	2128	BritishBoxersCottonB	890	6315	724	2359	4809	3.6839	0.5392	17/11/2016
22	Hulo LTD	HuezApparel	3181	1868	4140	HUEZapparel	466	1834	222	330	4243	2.2407	0.7444	15/11/2016
23	Pit Pat	pitpatpet	2735	941	1983	pitpatpet	731	4379	387	495	3543	2.2516	0.5782	15/11/2016
24	Builderstorm Limited	builder_storm	99	45	47	builderstorm	80	381	5	43	179	2.9162	0.1061	10/11/2016
25	The Baobab Network	baobabnetwork	14	3	10						34	0.9286	0.0000	04/11/2016
26	Innis & Gunn	innisandgunnUK	6377	7092	6078	InnisAndGunn	2634	334735	26382	36644	3173	42.6755	0.4154	03/11/2016
27	The Cheese Truck	cheesetruckldn	4972	5552	7467	thecheesetruck	455	7548	962	709	6387	3.9204	0.8323	03/11/2016
28	Everything Unlocked Limited T/A Healt	HealthUnlocked	3596	4756	3363	healthunlocked	682	4880	605	3436	4278	3.8417	0.6812	01/11/2016

Figure 8-4: Snapshot of Social Media Data of the Crowdfunding Campaigns

To test H1, we used social media use as the independent variable. This was measured as the total number of Facebook posts plus the total number of Twitter posts. This measure shows how often companies post on social media, and is a good indication of social media use. Our independent variable for H2 was social media appropriation. This variable is the Number of Facebook 'Likes' and 'Shares', plus Twitter 'Retweets' and 'Favourites', all divided by the total number of posts. For this, we wanted to get a measure of how engaged the crowd are with the company's posts. Social media appropriation gives us a result, where the higher the number, the more engaged the crowd is with their posts. For H3, we used social media selectivity as our independent variable. We measured this by and dividing it by the total number of social media posts. Social media selectivity gives us how active a company is on one social media over another. It is a measure between 0 and 1, where the smaller the number, the less selective they are, while the closer to 1, the more selective they are.

To test H4 and H5, we use social media appropriation as our dependent variable for our regression tests. With H4, our independent variable was social media selectivity, and for H5, social media usage was our independent variable.

8.2.7 Results

To test our hypotheses, we decided to use a series of regression tests. This is recognised as a valid approach to simple model-testing (Gefen et al., 2000). It is also the most popular approach for econometrics-based system-level studies of crowdfunding, meaning results can arguably be compared more easily. Further, a covariance-based approach such as AMOS or LISREL may have struggled with the modest sample size and formative measures. The third option was a component-based PLS modelling approach but the absence of reflective measures means the benefits are not obvious – especially given recent debate on the potential for false positives when PLS is applied too casually (Henseler et al., 2013).

To test our first 3 hypotheses, we ran all three factors side by side against the dependent variable of Funding. These results can be seen in Table 8-1. All posts were collected between two dates; the incorporation date, and the date funding was finished on Crowdcube.

Table 8-1: Regression Output for First 3 Hypotheses		
Factor	**Measure**	**Beta**
Social Media Usage	Total Facebook Posts + Total Tweets & Replies	0.238*
Social Media Appropriation	(Number of Facebook Likes + Shares + Number of Twitter Favourites + Retweets) / Total number of posts.	0.208*
Social Media Selectivity	(Maximum number of posts – Minimum number of posts) / Total number of posts.	0.081
*p < 0.05, **p < 0.01, ***p < 0.001		

This test had an R^2 of 0.118, and an adjusted R^2 of 0.88. Social media usage is positively related to the funding, with a beta of 0.238*. Thus, the result provides support for hypothesis 1. Hypothesis 2 was also supported with a beta of 0.208*. Thus, the result showed that social media appropriation is positively statistically related to funding. Social media selectivity is positively related to the funding but is not significant, with a p level greater than 0.05. Thus, the result did not provide support for hypothesis 3.

To test our other 2 hypotheses, we used social media appropriation as our dependent variable, and ran single regression tests against both social media selectivity and social media usage. The results of these tests can be seen in Table 8-2.

Table 8-2: Regression Output for Last 2 Hypotheses		
Factor	**Measure**	**Beta**
Social Media Selectivity	(Maximum number of posts – Minimum number of posts) / Total number of posts.	.072**
Social Media Usage	Total Facebook Posts + Total Tweets & Replies	.028
*p < 0.05, **p < 0.01, ***p < 0.001		

The social media selectivity is positively statistically related to the social media appropriation, with an R^2 of .072**, and an adjusted R^2 pf 0.062**. This test shows

provides support for hypothesis 4. Hypothesis 5 came out with an R^2 of 0.028, and an adjusted R^2 of 0.018. This test rejected the hypothesis, showing that there was no significance and relationship between social media usage and social media appropriation.

8.2.8 Discussion and Conclusion

In our first hypothesis, we focused on a company's use of social media, and how often they communicate with potential investors. Our study supported this hypothesis that the more a company posts to social media, such as Facebook or Twitter, the greater their proportion of funding will be for a crowdfunding campaign. From an identity point of view, we employed the view that companies that regularly communicate and interact with external parties via social media offers the crowd an opportunity to get to know what the company is about (Rapp et al., 2013). This result suggests campaigns that post more, are better conveying their identities across to the crowd of potential investors.

In our second hypothesis, we looked at social media appropriation and how it could impact the funding of a campaign. The results supported our hypothesis, showing that the number of 'Likes' and 'Shares' on Facebook, and the number of 'Favourites' and 'Retweets' on Twitter do have a positive impact on the funding a crowdfunding campaign receives. This supports previous SIT research that highly engaging social media campaigns are likely to generate commitment on part of the consumer (Hoffman & Fodor, 2010). This suggests that it is not just about the amount of posts, but the responses and engagement are also important.

Our third hypothesis dealt with social media selectivity, and its impact on funding. We employed the view that a user's preference for choosing a social media, such as Facebook over Twitter, is related to the user's personality (Hughes et al., 2012), and as a result, companies use different platforms depending on their target market (Parvanta et al., 2013). Our study rejected this hypothesis, suggested that the selective use of social media does not impact on the overall funding of a crowdfunding campaign.

The fourth hypothesis was focused on how social media selectivity could positively impact on social media appropriation. Our results supported this hypothesis by showing that as the social media selectivity increased, so did the level of social media appropriation. This builds upon SIT theory that giving preference to one group over others will make that group feel more empowered (Clark & Mills, 1979). It also uses the identity theory that companies can help individual stakeholders to accumulate bonds by interacting frequently and making affiliations (Dutton et al., 1994). This was the most interesting result out of all of the others, as we saw that social media selectivity did not have a direct impact on funding. Selectivity is important because it has a positive impact on social media appropriation, meaning a subtle and indirect impact on funding.

Our fifth and final hypothesis dealt with social media usage, and its impact on social media appropriation. We hypothesised that there would be a relationship between these two variables; however, this was rejected by our findings. Our results suggested that social media does not have any impact on social media appropriation. What this shows is that a large number of posts to Facebook or Twitter does not

mean you will get a response from the crowd. In relation to SIT, we argue that for there to be a link between these, those posts need to identify with the potential investors, in order for them to engage and respond.

This study has discussed crowdfunding, and the emergence of equity crowdfunding as an alternative form of investment, as opposed to traditional financing. We developed a research model that builds on social identity theory, to link social media activities to the funding of a crowdfunding campaign. To do this, we gathered data from Crowdcube, an established UK-based investment platform for equity crowdfunding.

From this study, we contribute to SIT by applying it to how investors act, and what makes them invest in campaigns. It builds upon other studies that use identify to explain crowdfunding and crowd behaviours (Aaker & Akutsu, 2009; Gleasure & Feller, 2016c; Kromidha & Robson, 2016). We take this further and show that social media activities can have an impact on funding for a crowdfunding campaign. Fundraisers will note that social identity is important in why a crowdfunding campaign can succeed or fail.

This study also presents a model of certain variables that can predict how well a campaign will do, in terms of funding. Similar to other crowdfunding research, (Mitra & Gilbert, 2014; Mollick, 2014) the model described here will also be able to help the fundraiser run a more successful campaign. It tells the fundraiser how important social media is in order to run a successful campaign.

8.3 ECIS 2017 - Large Crowds or Large Investments? How Social Identity Influences the Commitment of the Crowd

This research-in-progress paper was published in the proceedings of the 2017 European Conference of Information Systems (ECIS), a peer-reviewed conference which was held in Portugal, at the University of Minho, Guimarães (Nevin et al., 2017a). In this paper, I use Social Identity Theory to propose a model that links different characteristics of crowdfunding campaigns to the total and average investment. This paper provided the basis to further explore SIT and crowdfunding, examining the effect of social media on crowdfunding campaigns (Appendix 8.2), which ultimately led to the development of the full research paper presented in **Chapter 3**.

8.3.1 Abstract

Equity crowdfunding is increasing in popularity as an alternative to traditional financing for start-ups and growth companies to raise money for their business. This study discusses how equity crowdfunding is different from traditional financing, such as angel investors and venture capitalists. We argue this difference is brought further into focus when large numbers of crowd members invest small amounts, as opposed to fewer individuals making large investments. Building on existing research on Social Identity Theory, we look at why some crowdfunding campaigns are more likely to attract these contrasting types of investment (numerous small investments or fewer large investments). A model is presenting linking different characteristics of campaigns to total investment and average investment. This proposed model will be tested using public data gathered from Crowdcube, a leading UK-based equity crowdfunding platform. This study has significant implications for fundraisers who

may wish to target different types of crowds according to the nature of their business, i.e. smaller numbers of passionate investors to provide informed input or larger numbers of casual investors to help create awareness and spread positive word of mouth.

Keywords: Crowdfunding, Equity Crowdfunding, Social Identity, Crowdcube

8.3.2 Introduction

One of the biggest difficulties that start-ups face is attracting external finance, from venture capitalists or bank loans, to launch their company (Cosh et al., 2009). Large enterprises find it much easier to get financing from banks or venture capitalists to grow their company, while many start-ups rely on their own savings or personal loans from family (Harrison, 2013). In recent years, start-ups are not relying as much on business angels or banks, but instead are looking to raise money from the general public or 'crowd' (Belleflamme et al., 2014). Crowdfunding enables a start-up to engage with a large number of individuals and use the wisdom of the crowd (Surowieki, 2004), instead of a small group of specialized investors.

Online crowdfunding was first used by ArtistShare, where musicians could seek money for their new album (D. Freedman & Nutting, 2015). ArtistShare used rewards-based crowdfunding, where the crowd could pre-order a copy of the album by giving a certain amount of money. Once the musicians target was met, the album would be produced. With the launch of platforms like Indiegogo and Kickstarter in 2009, reward-based crowdfunding then spread to start-ups who were able to raise funds to develop a product or idea, without the need to go to a bank or other source of finance (Owyang, Tran, & Silva, 2013). More recently, start-ups are beginning to

use equity-based crowdfunding platforms such as Seedrs or CircleUp. These equity crowdfunding platforms give start-ups the opportunity to raise capital for their company by offering the crowd the chance to purchase a stake or an equity in the company, just like a venture capitalist or business angel would do.

There is relatively little empirical research on equity crowdfunding compared to other forms of crowdfunding (Gleasure & Feller, 2016b). Some research discussed the potential of equity crowdfunding for returns (Schwienbacher & Larralde, 2010), however, the majority of the research in this area has been related to regulation and focused on the new inexperienced investors (Fink, 2012; Stemler, 2013) These studies focused on the Jumpstart Our Businesses (JOBS) Act, a legal change that meant start-ups in the US could be funded by non-accredited investors, as well as accredited investors. This is a huge change because it is estimated that as many as 97% of Americans are considered to be non-accredited investors based on their income (Newbery, 2016; Scharpf, 2015) . One of the advantages of crowdfunding is the ability for large numbers of people to invest in opportunities that may be too unconventional or high-risk for small numbers of traditional investors (D. Chen & Han, 2012). This implies that an equity crowdfunding campaign with large numbers of minor investments is fundamentally different to one that includes fewer, larger investors (and by extension, traditional angel or venture capital investment).

This study uses Social Identity Theory to look at the crowd and show that there can be high investments/low volume of investors or low investments/high volume of investors, depending on the interest and commitment of the crowd with the company. The first part of this study will describe crowdfunding, with particular focus

on existing research around equity crowdfunding. Next, we will look at social identity theory, and how it can have an effect on a crowdfunding campaign. We then present a model and hypotheses of how different qualities of a campaign can impact its average investment. The next phase will be to look at an equity crowdfunding platform to test these hypotheses

8.3.3 Crowdfunding

Crowdfunding is related to the concept of crowdsourcing, which involves utilizing a multitude of humans to gather ideas, and solutions to solve a wide variety of problems. First coined by Jeff Howe in the June 2006 issue of Wired magazine, he describes crowdsourcing as a new web-based business model that uses the creative solutions of a large network, through the use of an open call for proposals (Howe, 2006). However, long before the term was coined crowdsourcing was being used to create new products, and engage customers. In 1949, Pillsbury, a beloved baking brand, held a mail-in cooking competition, called Bake-off (Parvanta et al., 2013). Customers would send in their recipes, and the best recipe would receive a prize. Pillsbury would create a cookbook with the best recipes, and send it to their customers, who received crowdsourced cooking tips. Like crowdsourcing, the idea of gathering money from a large network is not new. A very early example of crowdfunding occurred in 1884, when the pedestal for the Statue of Liberty was funded by Joseph Pulitzer through micro-donations by the American people (Bannerman, 2013). Online crowdfunding is relatively new, with new platforms such as Kickstarter and Indiegogo providing small to medium businesses with a new way to access capital.

According to a number of studies, (Belleflamme et al., 2013; Bradford, 2012; Gleasure & Feller, 2016b) there are four paradigms of crowdfunding. These four categories are:

1) Crowd Charity: With this type of crowdfunding, donors receive nothing for their contribution. This type of crowdfunding is used mainly by non-profit and NGO organizations to raise money. Charity crowdfunding platforms include Razoo, Crowdrise, and GoFundMe.

2) Rewards-based Crowdfunding: Here, backers typically contribute small amounts of money in exchange for benefits from a proposed product or service (e.g. provision of that product once it is developed). Kickstarter, PledgeMusic and Indiegogo are all platforms that enable rewards- based crowdfunding.

3) Debt-based Crowdfunding: This model is also referred to as peer-to-peer lending. Lenders give money to entrepreneurs or organizations, and expect repayment at some agreed upon time. Depending on the platform used, some lenders will receive interest, while others do not. Examples of peer-to-peer crowdfunding platforms include Kiva, Lending Club, and Funding Circle.

4) Equity Crowdfunding: This type of crowdfunding offers investors a stake (or equity) in the company in return for their funds. This form of crowdfunding is usually used to fund the launch or growth of a company. CrowdCube, Seedrs, and CircleUp are some of the most popular equity crowdfunding platforms.

Equity crowdfunding offers backers the opportunity to become more than just donors. Instead of fixed instant rewards with rewards-based crowdfunding, backers

are given a share of the company in return for their contribution (Griffin, 2012). These backers are looking to get a return on their investment in the form of future dividends, company sale, or a public offering. In a short period of time equity crowdfunding is becoming more important in the world of finance. In the UK alone, equity crowdfunding has grown from £28 million in 2013, to £245 million in 2015, making equity crowdfunding the second fastest growing sector within the UK alternate finance sector (B. Zhang et al., 2016).

Much of the existing research around equity crowdfunding has been non-empirical and legal literature about protecting the new investors, and research focused on the laws and regulations surround equity crowdfunding. (Cohn, 2012; Gabison, 2015; Stemler, 2013) . While there have been some quantitative studies done on equity crowdfunding, (Agrawal et al., 2015; Burtch, 2011) there is still very little quantitative research compared to rewards or debt based crowdfunding. Until recently, in many countries equity- based investment was restricted to accredited investors, who were usually wealthy business angles or venture capital funds. However, new legislation, such as Title III of the JOBS Act in the USA, as well as the FCA's regulatory approach to crowdfunding, has begun to open up the potential for equity crowdfunding among non-accredited investors (FCA, 2014; Griffin, 2012) .

There are a number of differences between equity crowdfunding and traditional means of financing. Most notably, a major benefit of equity crowdfunding is that start-ups are able to reach a much larger group of investors, rather than just a small number of angel investors. Equity crowdfunding enables a company to raise funds, while also building awareness of themselves among consumers. Documented

benefits of using crowdfunding over angel investment can include market development and opportunities for feedback (Schwienbacher & Larralde, 2010). This means that SMEs can reach out to like-minded individuals who would be much more willing to invest in their company. However, there also is less opportunity for specialised feedback or sophisticated support ecosystems with equity crowdfunding (Gleasure, 2015). Venture capitalists and business angels often specialise in a certain sector, which means that if you can secure funding from an investor, they will also bring sector-knowledge, support and expert advice to the table, and will open connections that would have been impossible without them (Van Osnabrugge, 2000). This presents an important but overlooked question about equity crowdfunding and the type of crowd participating in a campaign – what characteristics of a crowdfunding campaign are more likely to attract small investments from large numbers of investors, as opposed to larger investments from fewer investors?

8.3.4 Social Identity Theory and Equity Crowdfunding

Social identity theory (SIT) was introduced by Henri Tajfel and John Turner in the 1970s and 80s as a means of explaining intergroup behaviour (Tajfel & Turner, 1979). Social identity is a person's sense of 'whom they are', based on the social group to which they belong. According to SIT, we adopt the identity of the group that we belong to, and we act in ways that we perceive members of that group act (Turner & Tajfel, 1986). As a consequence of your identification, you will develop emotional significance to that identification. SIT suggests a person does not have one 'personal self', but rather multiple selves and identities associated, each associated with different social groups in which they perform some particular role (Turner & Tajfel, 1986). SIT has been applied to explain behaviours in a number of different domains,

including why we choose entertainment media in accordance with certain group memberships (Trepte & Krämer, 2007), how we categorise ourselves in our organization context (Hogg & Terry, 2000), and how we make economic decisions that may appear irrational (Akerlof & Kranton, 2000).

The groups to which people belong are an important source of pride and self-esteem (Abrams & Hogg, 1988). Individuals perceive others as part of 'ingroups' with which they socially identify, or 'outgroups' with which they do not (McLeod, 2008). Central to this are shared norms and attitudes, which determine how members of an ingroup interact (Blumer, 1986; Mead, 1934). In relation to crowd behaviour and crowdfunding, it has been seen that a person's identity influences what people do and why they give (Gerber & Hui, 2013). Research has shown that fundraisers who are able to convey their personality and identity are more likely to succeed (Thies et al., 2016). Investors pay close attention to the project creators themselves, meaning fundraisers have to get their identity across to the investors in order to engage the crowd (Gleasure & Feller, 2016c). Most importantly for this study, SIT suggests that people will invest more of their personal time and effort to support ideas that resonate with their social identity (Aaker & Akutsu, 2009). Clearly, this is not the first paper to apply SIT to crowdfunding (Feller et al., 2017; Kromidha & Robson, 2016) but we want to take it further, and explain the similarities and differences between crowdfunding and the traditional investments approach to fundraising

8.3.5 Hypotheses and Model

Figure 8-5 illustrates five explanatory constructs divided into two over-arching explanatory mechanisms, i.e. company articulation and company specificity. Many of

the disclosures that may assist in image construction and social identification could also impact on investment for other reasons, e.g. additional information could be seen as an attempt to reduce information asymmetry and increase trust by conveying fundseekers' benevolence (Pötzsch & Böhme, 2010). Hence, both of these measures are important to understand the impact of different campaign characteristics. If campaign has a low average investment, it is likely that it is of interest to many people, but the company's social identity did not resonate strongly with the crowd. Oppositely, if a campaign has a high average investment, it may be of interest to a smaller number of investors, but those investors are more engaged with the company.

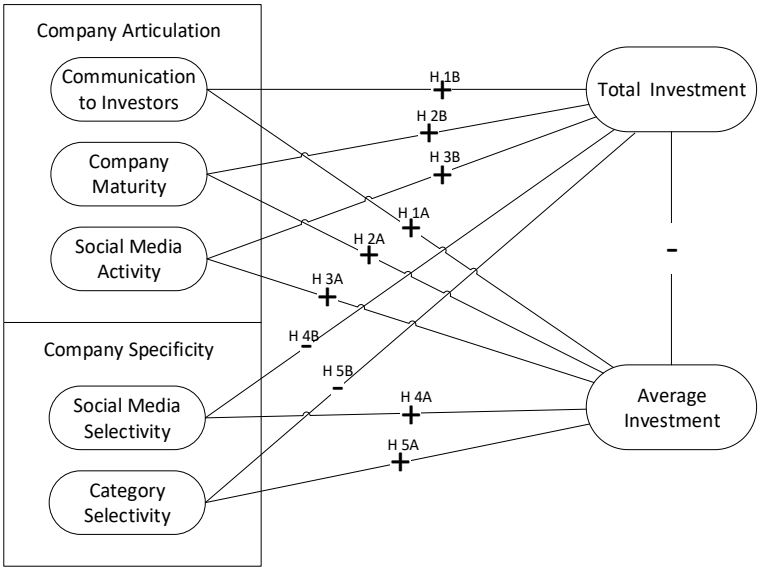


Figure 8-5: Factors Influencing Total and Average Investment in a Crowdfunding Campaign

8.3.5.1 Company Articulation

To relate to someone, or something, we need to first understand it. The more detail a company provides, the easier it will be for the crowd to find elements to which to identify (S. G. Scott & Lane, 2000). From existing research on organizational identity,

we know that upper management are responsible for defining and communicating what is attractive about the organization to other stakeholders (Dutton & Dukerich, 1991; Elsbach & Sutton, 1992). Stakeholders often relate to an organizational image, or identity, by using personal characteristics and interpersonal relationships to determine organizational characteristics (Zott & Huy, 2007). Thus, three types of disclosure are likely to articulate a company in a manner that lends to social identification.

One way a company can define itself more is to provide the crowd with more information in the form of documents and financial records. Companies can use a crowdfunding platform to communicate with the crowd, telling them more about their company and giving them any updates. Communication in a start-up is important, especially between the company and its investors. Without this honest communication, the start-up can easily lose the confidence of the investors (Beier & Wagner, 2015; Blair, 1998). By regularly sharing updates and all relevant documents, the company will become more defined to potential investors and demonstrate a willingness towards transparency. Thus, we hypothesise that companies who communicate more with potential investors will be defining their business more and more, and so, they will have a higher average investment and total investment. The number of documents will be gathered from the crowdfunding platform, which have been provided from the Companies House.

***H 1A**: Companies that provide more documents will have a higher average investment*.

***H 1B:** Companies that provide more documents will have a higher total investment.*

The length of time a company has existed can also tell a potential investor more about the company, so helping to socially identify with different aspects of it. Much of the perceived image of a person or company is built up over time through ongoing interaction with various stakeholders (Brewer & Gardner, 1996; Swann, 1987). However, there are also other reasons why companies that have been in business for a number of years may attract investment, e.g. because they are perceived as stable or because they are perceived to be making an effort to keep potential customers engaged (Owyang, 2013). Thus, as with the provision of documentation, we hypothesise that longer business histories will have a higher average investment and total investment. The length of time a company is in business will be gathered from the crowdfunding platform, which have been provided from the Companies House

H 2A: *Companies that have a long business history will have a higher average investment.*

H 2B*: Companies that have a long business history will have a higher total investment*.

One of the most popular means of interacting with external stakeholders is social media (Waters et al., 2009; H. J. Wilson et al., 2011). A company that regularly communicates and interacts with external parties via social media offers the crowd an opportunity to get to know what the company is about (Rapp et al., 2013). For example, a fundraiser can set up a Facebook page to engage the crowd even before they decide to use a crowdfunding platform. Studies have shown that the greater number of Facebook friends, the more successful a crowdfunding project is in terms of amount of money raised (Mollick, 2014). Research has also found that the fundraiser's ability to demonstrate their identity in larger social networks is

associated with success, in terms of a pledge/backer ratio (Kromidha & Robson, 2016). Thus, we hypothesise companies that are active on social media will have a higher average investment and total investment. Social media activity will be collected from each of the crowdfunding campaigns that are analysed. We will look at the number of social media posts of each crowdfunding campaign.

H 3A*: Companies that are more active on social media will have a higher average investment.*

H 3B*: Companies that are more active on social media will have a higher total investment.*

8.3.5.2 Company Specificity

While communicating personal and corporate values is important to establish a relatable identity, it is also important for to establish the values or norms that are excluded (Elsbach & Kramer, 1996; Humphreys & Brown, 2002). The networks and groups that a company belongs to will have an impact on how the crowd view their social identity and ultimately, if they will invest in the company and how much they invest. However, while clearly articulating the company tells the crowd who that company is, the interactions with different social groups and the media they use will tell the crowd who they are not (Gleasure & Feller, 2016c). This can be related back to existing research on 'symbolic interactionism', which tells us that the goals of our interactions with one another are to create shared meaning (Mead, 1934). People act toward things on the basis of the meanings those things have for them, and the meaning of such things is derived out of the interactions one has with one's fellows (Blumer, 1986). Smaller and closer social groups will be more cohesive than a larger

group, and will have a stronger sense of shared meaning. From this we will argue that those smaller social groups will invest more in campaigns that have meaning to them, and whose identity is in line with their own.

The first route towards establishing specificity in a company's identity is the social media that company chooses to use. This selective use can tell a great deal about a company's social identity and whom they are targeting (A. M. Kaplan & Haenlein, 2010). Research suggests that a user's preference for choosing a social media, such as Facebook over Twitter, is related to the user's personality (Hughes et al., 2012). As a result, companies use different platforms depending on their target market (Stelzner, 2014). For example, figures from September 2015 showed that Facebook appealed to adults, with 79% of adult internet users who are aged 30-49 are using it. Facebook is also popular with women who are online, with 77% using it. Instagram is more attractive to younger users as to opposed to an older crowd, with 55% of online adults aged 18-29 using it (Duggan, 2016). This suggests companies that are more selective with their social media will have fewer backers, however they will be more passionate, meaning they will have a higher average investment. However, because they are lowering the number of potential investors with whom they are interacting, there will be a smaller crowd, which means they will have a lower total investment. Thus, we hypothesise companies that are more selective of the social media they use will have a higher average investment and lower total investment. To measure a company's social media selectivity, we will analyse their usage of different social media and look at which social media they are more active on.

H 4A: *Companies that are more selective of the social media they use will have a higher average investment.*

H 4B: *Companies that are more selective of the social media they use will have a lower total investment.*

Conceivably, the same principles are true of the category in which a campaign is positioned. Depending on the crowdfunding platform, there will always be categories, or sectors, that are more or less popular with the mainstream crowd. For example, according to the Seedrs portfolio update in September 2016, the Food & Beverage and the Home & Personal sectors were the most popular, while the Games sector was the least popular (Seedrs, 2016). This lends itself towards more intense social identification in the less popular categories, as relationships in smaller groups tend to be more personal (Kelly & Barsade, 2001). Arguably, this suggests that a less popular category tells the crowd more about the social identity of the company and creates a deeper, albeit less widespread connection. Thus, we hypothesise companies that are fundraising in less popular categories will have a higher average investment and lower total investment. To measure category popularity, we will rank the categories of the sample of crowdfunding campaigns.

H 5A: *Companies that are in a less popular category will have a higher average investment.*

H 5B: *Companies that are in a less popular category will have a lower total investment.*

8.3.6 Proposed Method

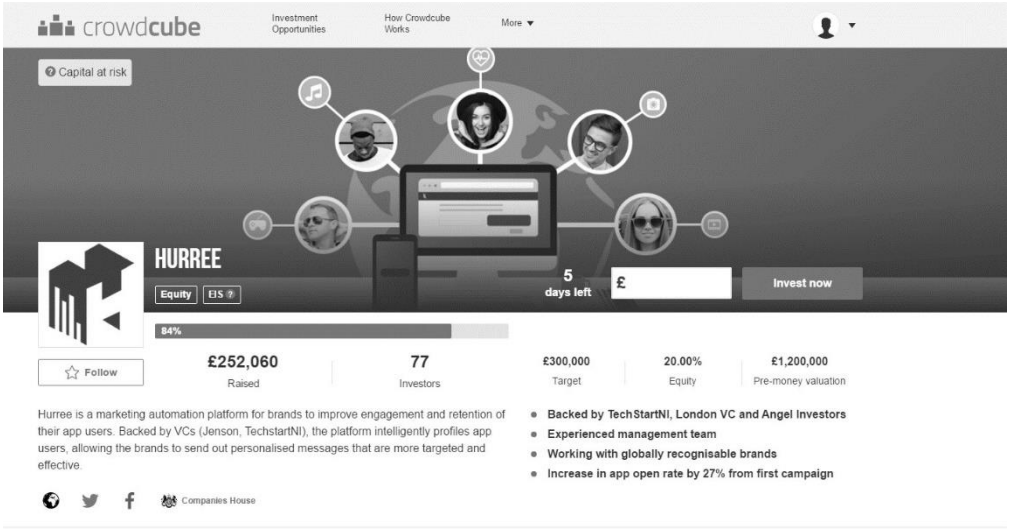


Figure 8-6: Screenshot of a Crowdfunding Campaign on Crowdcube

In order to test the proposed research model, we intend to gather public data from an established equity crowdfunding platform, namely Crowdcube. Crowdcube is a UK-based online equity crowdfunding website that enables members of the general public to invest in start-ups, early stage and growth businesses, alongside professional investors. Launched in 2011, Crowdcube has become one of the leading equity crowdfunding models, having raised over £195 million to fund over 460 campaigns. Crowdcube is growing at a rapid rate and is continuing to attract new members, currently with over 300,000 registered investors on the platform.

Crowdcube is selected for two key reasons. First, Crowdcube is an established platform which has been operating for over five years at the time of writing. This means the dynamics of the platform are relatively mature and allows analysis to focus on completed campaigns, rather than trying to predict outcomes of ongoing fundraising. There have also been a number of high profile successes, creating a level of public awareness (hence, possible investor diversity). Companies like JustPark and

Sugru have both raised over £3 million using Crowdcube. JustPark raised over £3.7 million from 2,900 investors in just 34 days. Sugru raised over £3.3 million, and did not just benefit from small investors, as a single investor dedicated £1 million. This was the largest single investment on the Crowdcube platform. In July 2015, E-Car Club was the first successful exit from Crowdcube. The company received a significant investment from Europcar, which meant that 63 original investors in E-Car Club via Crowdcube benefited from a multiple return on their investment.

Second, Crowdcube caters to investors of varying experience. Investors on Crowdcube are divided into four groups; 1) Everyday Investors, 2) Advised Clients, 3) Self-Certified Sophisticated, and, 4) High net worth Investors. Both professional and non-professional investors can give as little as £10 to fund a company. Crowdcube is a good platform to test our hypotheses because it is one of the leading companies in the equity crowdfunding space, with a diverse crowd made up of mostly new investors, but also many experienced investors.

It should be noted that Crowdcube has two basic models. The first is the debt-based, or bond, model. With this model you are giving a loan to a company in return for a fixed amount of interest every year. The second model, and the most popular on the platform, is the equity-based model, where investors give money in return for a share in the business. Consistent with the focus of this study, data gathering and analysis will focus on campaigns adopting the equity-based model. Figure 8-7 shows empirical indicators for each of the theoretical constructs described in each hypothesis in the research model.

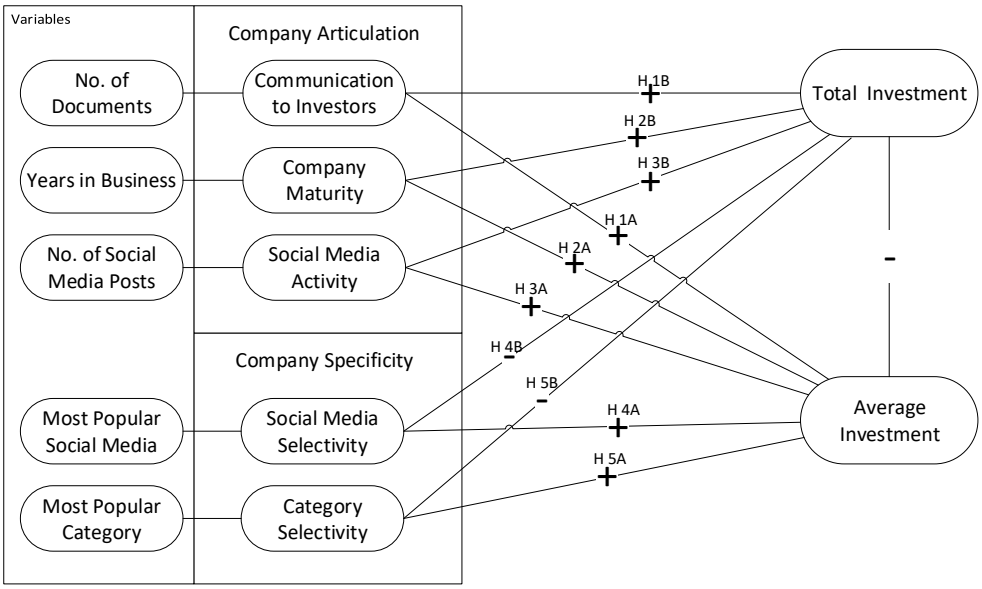


Figure 8-7: Research Model with Empirical Indicators for Crowdcube.

8.3.7 Discussion and Expected Contributions

This study has discussed the emergence of equity crowdfunding and why it differs from both other forms of crowdfunding and traditional financing. We have identified a gap in existing research concerning the features of equity crowdfunding campaigns that are more likely to attract large individual investments, as opposed to large numbers of small investments. A research model was developed that builds on social identity theory (SIT) to link five key constructs to the average investment size a campaign may expect. Ongoing research proposes to test this model using a field study of investment on Crowdcube, an established UK-based investment platform for equity crowdfunding.

From this study we hope there will be three main contributions. First, we identify the average donation received by a campaign as an important metric for the type of crowd attracted to specific campaigns. Other studies have used the average investment/pledges to determine success (Beier & Wagner, 2015; Pitschner & Pitschner-Finn, 2014; Wash & Solomon, 2014). However, unlike these previous

studies, we are not using the average investment as a measure for the overall performance of a campaign. Instead, we suggest it can be used to measure how successful the company was in getting their identity across to the crowd and locating investors with particularly strong engagement in the company and/or domain.

Second, this study contributes to SIT by applying it to help explain how investors act, and why they invest in different companies at different levels. Fundraisers will observe that social identity plays a big role in why a campaign succeeds or fails. Several others studies have applied SIT to explain crowdfunding and crowd behaviours (Feller et al., 2017; Gerber & Hui, 2013; Kromidha & Robson, 2016; Thies et al., 2016). However, by linking SIT with deeper aspects of engagement we propose to explain more than investment; we propose to explain how crowds become more or less different from traditional few investors/large investments approaches to fundraising.

Third, the study presents a model of the variables that can predict the average investment received by an equity crowdfunding campaign. Much crowdfunding research focuses on creating models that will help the fundraiser to run a more successful campaign (Greenberg et al., 2013; Mitra & Gilbert, 2014). Unlike these studies, the model presented in this study will allow companies to design campaigns that not only maximise fundraising, but also determine the type of fundraising that best suits the needs of the company. Those companies who are seeking to spread awareness among large numbers of potential customers may prefer a different strategy to those seeking to attract smaller numbers of engaged and collaborative investors to assist in business development.

8.4 ECSM 2018 - Jumping the Fence: How Consumer Sentiment on Social Media Changes after Crowdfunding

This research-in-progress paper was presented at the 2018 European Conference on Social Media (ECSM), which was held in the Limerick Institute of Technology, Ireland (Nevin et al., 2018). This conference discussed how social media is being adopted and applied in almost every area of human activity. My paper considers how organizational image around a company or product is impacted by crowdfunding. I suggest analysing social media to investigate the public sentiment around a company, and how a crowdfunding campaign impacts this sentiment. Building upon the research questions identified in this paper, as well as the feedback provided at the conference, this is extended into a full research paper, presented in **Chapter 5**.

8.4.1 Abstract

Crowdfunding has helped thousands of entrepreneurs to finance their innovative products by engaging with large numbers of potential investors. The most effective way for fundraisers to engage with potential backers, is through social media. If used in the right way, social media can enable fundraisers to raise awareness of their campaign, engage with potential investors, and will ultimately have a positive impact on a crowdfunding campaign. Through social media, fundraisers are able to gauge how the public feels about their product or company, which is the main focus of this study. This study brings together research around organizational and marketing image, suggesting that as consumers invest, they move from external consumers to investors that are within the boundary of the company. This brings into question whether consumer sentiment towards the company changes after fundraising, as they become stakeholders. Thus, we use social media to investigate the public

sentiment towards a company during different stages of their equity crowdfunding campaign.

Keywords: Equity Crowdfunding; Sentiment Analysis; Public Image; Social Media.

8.4.2 Introduction

Small business and start-ups often face significant challenges in acquiring finance from traditional sources such as bank loans, venture capitalists, or business angels (Cosh et al., 2009). This led to the growth of crowdfunding as an alternative financing model, which has enabled thousands of start-ups and entrepreneurs to fund their venture through the general public. Unlike traditional means of financing, crowdfunding is open to everyone, which allows crowdfunding allows fundraisers to collect financial contributions from a large number of backers/investors, through an open call to the internet (Schwienbacher & Larralde, 2010).

Clearly, the most significant reason for launching a crowdfunding a campaign is to attract financial support, however, there have been many studies that have found that fundraisers are also motivated by the marketing aspect of crowdfunding, and its ability to raise awareness of their work (e.g. Gerber & Hui, 2013). One of the key strengths of crowdfunding is its ability to leverage the power of social media to build widespread support and relationships. If used in the right way, social media can enable fundraisers to raise awareness of their campaign, engage with potential investors, and will ultimately have a positive impact on a crowdfunding campaign (Moisseyev, 2013). While there have been studies that discuss how crowdfunding is a tool for marketing a project (e.g. T. E. Brown et al., 2017), there is a lack of evidence that shows the actual impact on a company's image during the lifecycle of a

crowdfunding campaign, and its ability to create an energetic community of supporters.

The objective of this study is to examine how public sentiment around a company or product is impacted by crowdfunding. Bringing together research around organizational and marketing image, we suggest that as consumers invest, they move from external consumers to investors that are within the boundary of the company. This brings into question whether consumer sentiment towards the company changes after fundraising, as they become stakeholders. Thus, we use social media to investigate how public sentiment around a company or product is impacted by an equity crowdfunding campaign.

8.4.3 Organizational Image

The concept of organizational/corporate image can be traced back to Gardner and Levy (1955), who introduced the concept of "image". In marketing literature, definitions of image place external individuals, or consumers, at the centre. According to Lopez et al. (2011) there are three definitions of image in marketing literature. The first view of image is that it is the total impression an organization makes on the minds of the public (Dichter, 1985). Corporate image is also viewed as perceptions, or mental pictures of an organization that are created by the public (Margulies, 1977). The third view of corporate image defines it as "a person's belief about an organization" (Dowling, 2004). An individual's experiences, impressions, beliefs and knowledge about an organization will all help shape corporate image (Markwick & Fill, 1997).

Throughout organizational literature, image has generally been defined as the way members of the organization believe others view their organization, or "construed external image" (Dutton et al., 1994). Whetten et al. (1992) describe it as an organization's desired image; the way that top management would like outsiders to view the organization. Gioia et al. (2000) suggest that organizational image is concerned with projecting an image that is based on identity, and Schultz, Hatch, and Larsen (2000) define image as the expressed identity that leaves impressions on external individuals. The common theme running through these definitions is that organizational image is linked to how internal members project their image, and believe external entities view their organization (Gioia & Thomas, 1996).

In relation to crowdfunding, image is an important concept, as how a campaign is viewed by the crowd is linked to its success. From previous research we see that as individuals from the crowd become backers, they feel like they become part of the company (Gleasure & Feller, 2016b). As backers move from consumers to stakeholders, they begin to move from external to internal entities, and therefore view the image of the company differently. This move from consumer to stakeholder is particularly relevant with equity crowdfunding, where backers receive a piece of the company, bringing into question whether consumer sentiment towards the company changes after fundraising, as they become stakeholders.

8.4.4 Crowdfunding and Public Sentiment

This study focuses on equity crowdfunding, which enables investors to receive a stake (or equity) in early-stage companies in return for their funds, and become more than just donors (Ahlers et al., 2015). Instead of fixed instant rewards with rewards-

based crowdfunding, backers are given a share of the company in return for their contribution. From previous research, it is seen that despite considerable public interest in equity crowdfunding, there is still relatively little empirical research on this paradigm compared to other forms of crowdfunding (Gleasure & Feller, 2016b). Much of the crowdfunding literature has been concerned with the capital seekers motivation for crowdfunding (Moritz & Block, 2016). Gerber and Hui (2013) identifies increasing awareness of a product as one of the key motivators for fundraisers. To many fundraisers, the marketing aspect of crowdfunding is just as important, and sometimes more important, than just raising funds for the venture. Crowdfunding campaigns provide start-ups with the ability to form relationships with backers, and ultimately build brand awareness through social media use (T. E. Brown et al., 2017). Sentiment analysis has been used before to analyse crowdfunding, and whether it can predict success or failure of a campaign (e.g. W. Wang et al., 2017). Unlike these studies that look at the impact image has on a crowdfunding campaign, we are exploring the influence a crowdfunding campaign has on the company's image.

When trying to understand how a crowdfunding campaign can impact a company's image, we argue that four research questions are presented. First, we need to understand the general sentiment of a company undertaking a crowdfunding campaign, and what in what state they are operating during the crowdfunding campaign. For example, are companies operating in their normal state, or are they operating in a hype state by promoting and using social media more.

RQ1*: Are crowdfunding companies operating in a hype state?*

Next, we need to look at the difference between company and public sentiment. Company sentiment refers to the opinions and attitude when communicating with the crowd, while public sentiment is how the general public are feeling about the crowdfunding company.

RQ2*: Who is maintaining the image state of the company?*

Third, we want to examine the impact a crowdfunding campaign has on the sentiment of the crowd. To do this, we will compare both the public sentiment and company sentiment before and after the crowdfunding campaign. Here, we are exploring how image states change as the company progresses from concepts to tangible objects or outputs.

RQ3*: Does the crowdfunding campaign have an impact on the overall image of a company?*

Lastly, we want to understand these changes in company and public sentiment, by looking at who is driving this change. For example, is company sentiment leading public sentiment, or are they mutually exclusive. This would be useful for fundraisers to see if how they are communicating to the crowd has any effect on the emotions of the crowd.

RQ4*: Does company sentiment change as public sentiment changes?*

8.4.5 Method

In order to test the research questions, we will gather public data from an established equity crowd-funding platform, namely Crowdcube. Data from a sample of successful crowdfunding campaigns will be gathered, as well as social media data from their

Facebook accounts. To gather social media data, we will look at the campaign's Facebook page. All this data is public, and made available from Facebook via their application programming interface (API). To identify the sentiment in social media data we will use public packages in R, as well as Linguistic Inquiry Word Count (LIWC). LIWC is a text analysis program that counts words in psychologically meaningful categories. LIWC has been used in many empirical research papers because of ability to detect meaning in a wide variety of experimental settings (Tausczik & Pennebaker, 2010). These metrics will provide an insight into the impact crowdfunding has on the company's public image, and also, if there is a change in public sentiment of equity crowdfunding campaigns after a successful fundraise.