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By *Ross Brown, Suzanne Mawson and Alexander Rowe*

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Abstract

Equity crowdfunding is an increasingly important source of entrepreneurial finance for new ventures. However, empirical research and theoretical development have struggled to keep pace with its growth. This paper outlines findings from a large-scale interview study of start-ups who obtained equity crowdfunding in the UK. It explores the personal and business networks involved in the equity crowdfunding process, taking a processual perspective. The empirical findings show that networks and social capital play a critical role in the crowdfunding process. Start-ups leverage, build and drawn upon a complex array of network actors and "ties" as they move through the different stages of their crowdfunding journey. The paper concludes that equity crowdfunding is a highly "relational" form of entrepreneurial finance requiring holistic forms of investigation. The implications for further research are outlined.

Key Words

Entrepreneurship	**Start-ups**	**Networking**
Equity Crowdfunding	**Alternative finance**	**United Kingdom**

1. Introduction

During the 1980s, the view of the entrepreneur as a "heroic" and "atomistic" individual began to lose its foothold within the entrepreneurship literature (Elfring & Hulsink, 2003), when increasing significance was attached to the role of networks in shaping the performance of new ventures (Birley, 1986; Aldrich et al., 1987)[1]. In turn, this spawned an extant literature on networks which has instead portrayed entrepreneurship as fundamentally "a relational task, a combinatorial problem" (Brüderl & Preisendörfer, 1998, p. 214).

Given that finance is often a key resource deficiency in start-ups (Cassar, 2004), utilizing networks to access such resources is seen as a key part of the venturing process (Garnsey, 1998; Sullivan & Ford, 2014; Witt, 2004; Uzzi, 1999). While banks traditionally dominated the funding landscape for small and medium-sized enterprises (SMEs) (Colombo & Grilli, 2007), in recent years various "alternative" sources of finance, including crowdfunding, have proliferated (Ahlers et al., 2015; Bruton et al., 2015; 7Cordova et al., 2015)[2]. Equity crowdfunding has grown particularly rapidly, especially in the UK which is now Europe's largest and fastest growing market for this form of entrepreneurial finance (Baeck et al., 2014) largely due to early deregulation and attractive fiscal incentives put in place by the UK government (British Business Bank, 2014).

Crowdfunding is rooted in the broader concept of crowdsourcing (Simula and Ahola, 2014) where the 'crowd' is collectively tapped to provide "ideas, feedback, and solutions to develop corporate activities" (Belleflamme et al, 2014, p. 586). Equity crowdfunding occurs when a large number of individuals provide small amounts of finance to businesses via online platforms. It is defined as "a form of financing in which entrepreneurs make an open call to sell a specified amount of equity or bond-like shares in a company on the Internet, hoping to attract a large group of investors" (Ahlers

[1] A widely cited definition of a social network is "a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved" (Mitchell, 1969, p.2).

[2] While there are various forms of crowdfunding: rewards-based, donation-based, lending-based and equity crowdfunding (Collins & Pierrakis, 2012; Mollick, 2014), this paper purely focuses on the latter.

et al., 2015, p. 955). In essence, these equity crowdfunding platforms act as mini "stock markets" for start-ups.

In theory, equity crowdfunding should render the role of networks superfluous, as firms and investors are brought together seamlessly via third-party internet platforms. Rather than utilise personal networks of friends and family, start-ups should be able to access funding directly from anonymous investors through these online mechanisms, where personal communication is replaced with "pseudo-personal" forms of communication such as videos and social messaging (Moritiz et al., 2015). Indeed, some observers have described crowdfunding as the "disintermediation of the finance market" (Harrison, 2013, p. 286), with studies highlighting the great physical distance between crowdfunded ventures and the "people who fund them" (Agrawal et al., 2015, p. 254).

Despite this emerging view of crowdfunding as a "disintermediated" or "de-networked" process (Agrawal et al., 2015), emerging empirical research suggests that networks do in fact play a role in the crowdfunding process (Colombo et al., 2015; Frydrych et al., 2014; Mollick, 2014) and that crowdfunding platforms themselves act as "network orchestrators" bringing together start-ups and potential investors (Ordanini et al., 2011). However, to date there has been a lack of empirical work on the issue of networks within equity crowdfunding, specifically how new ventures use networks to utilise and reap benefits from crowdfunding.

This paper makes an important contribution to both the emerging crowdfunding literature as well as to the business networks literature by exploring the role of networks as start-ups go through the equity crowdfunding "process". Given networks "aren't static: they evolve" (Hite, 2005, p. 115), the issue of process is important because, as we will identify, raising equity crowdfunding involves distinctive temporal stages. We therefore explore the processual changes in networks during the crowdfunding process, drawing on findings from a major interview-based study of equity-crowdfunded firms in the UK. The paper addresses a simple but multi-dimensional research question: "*what role do different types of networks play in the equity crowdfunding process*"?

The paper is structured as follows. First, we review two relevant strands of literature on networks and crowdfunding, drawing on social and business network theory for our conceptual framing. The methodology is then outlined before the empirical findings are presented and then discussed. Finally, conclusions and implications for future research are addressed.

2. Literature Review

2.1 Networking and Entrepreneurship

There are two main traditions in the study of entrepreneurial networks - the social network (SN) and business network (BN) perspectives (Slotte-Kock & Coviello, 2010). The SN tradition focuses on the networks of individuals and generally emphasises the identification and measurement of "weak" versus "strong" ties (Granovetter, 1973), often quantitatively measuring the number and additive nature of ties. This is a common perspective within the wider entrepreneurship literature (Slotte-Kock & Coviello, 2010), where there is a continued focus on – and interest in – the role social capital plays in shaping entrepreneurship (Gedajlovic et al., 2013). The BN perspective, on the other hand, is a much more dynamic approach to studying networks and focuses on "how" relationships change and "why" change occurs. Developed by industrial marketing scholars (Mattsson, 1997; Ritter et al., 2004), interaction between parties is considered to be a crucial importance in this systemic perspective (Freytag & Ritter, 2005; Håkansson & Snehota, 1989). Firms are viewed "as complex adaptive systems" (Ritter et al., 2004, p. 177) which are embedded in networks "of ongoing business and non-business relationships, which both enable and constrain" their performance (p. 175). Following the integrative approach advocated by some (Slotte-Kock & Coviello, 2010), we aim to examine networks drawing on both perspectives.

A key benefit of networks within the entrepreneurial process is the access they provide to information (Hoang & Antonic, 2003) and a strong consensus has emerged that networks play a central role in the emergence and growth of firms (Greve & Salaff, 2003; Hite & Hesterly, 2001; Jack et al., 2008; Larson & Starr, 1993; Lavie, 2006; Lechner & Dowling 2003; Sullivan & Ford, 2014).

Indeed, the so-called "network success hypothesis" is testament to this intrinsic belief (Brüderl & Preisendörfer, 1998). From this vantage point, entrepreneurs with larger and more diverse networks are able to garner a greater level of support and are thus likely to be more successful than entrepreneurs with smaller or less interactive networks (Witt, 2003). Studies have found an "accumulative advantage" for well networked actors and a corresponding "liability of unconnectedness" for peripheral actors (Glückler, 2007, p. 624). As Moore aptly states, "innovative businesses can't evolve in a vacuum" (1993, p. 75).

This issue of firm evolution is of critical importance. Scholars have argued that as firms develop and grow so to do their resource needs. Relationships and networks subsequently shift in line with changing resource requirements (Hite & Hesterly, 2001; Martinez & Aldrich, 2011). While personal networks may be paramount for a firm's initial developmental trajectory, "weak ties" with a wider range of actors will become more important for continued development and growth. Indeed, as firms grow, entrepreneurs continue to rely on networks for business information, advice and problem solving (Johannnison et al., 2002), with the network of the firm often superseding that of the original entrepreneur (Witt, 2003). As a result of this temporal development of networks, scholars have called for research to adopt a more dynamic or evolutionary perspective (Hite, 2005; Hoang & Antonic, 2003; Baraldi et al., 2012) to better understand the changing nature of relationships and networks over a discrete time period.

Where a temporal dimension has been adopted, a life-cycle approach is often utilised. For example, Larson and Starr (1993) posit a three-stage sequence of development where strong ties dominate at first, before a wider heterogeneity and multiplexity of actors and relationships becomes important. Other work has examined the temporal alterations in network behaviours (Dagnino et al., 2008; Hoang & Antonic, 2003; Jack et al., 2008), with some scholars investigating the transition from predominantly identity-based personal networks to more "calculative networks". These are noted to be more opportunistic networks involving a larger and more diverse set of purposefully functional or work-based ties (Hite & Hesterly, 2001). These more varied, often arm's length, ties "have the potential to provide new resources and overcome the challenges of resource availability" (Hite & Hesterly, 2001, p. 280). However, given the instability of the network structure over time (Slotte-Kock & Coviello, 2010), it is important to examine how firms engage in ongoing "network management" within adaptive complex business networks (Ritter et al., 2004). Some observers emphasise that managing "in networks" is a "two-way process" whereby network management is about managing *interactions* with others, not managing other network actors themselves (Ritter et al., 2004).

Despite a considerable body of knowledge on network issues, the literature is still considered to lack "a rich understanding of when, how and why ties shift from weak to strong, social to economic, or short-term to long-term (or vice-versa)" (Slotte-Kock & Coviello, 2010, p. 48). This is particularly important in the context of new ventures and SMEs. We know that many new ventures are resource constrained and that, as they look to grow, constructing "portfolios of resources" (both tangible and intangible) becomes critically important (Sullivan & Ford, 2014, p. 552). While most empirical work in the network literature has examined access to intangible resources such as advice and information (Hoang & Antonic, 2003), much less work has been devoted to resources such as finance, which is arguably one of the most critical resources for early stage businesses (Cassar, 2004). However the majority of research conducted suggests that networks heavily mediate access to both debt and equity finance in smaller firms (Hellmann et al., 2008; Seghers et al. 2012; Shane & Cable; Uzzi, 1999; Uzzi & Gillespie, 2003) and play a vital coordinative role in facilitating interactions between start-ups and funders (Shane & Cable, 2002).

2.1 Networking and Equity Crowdfunding

This form of finance has the potential to fill the "funding gap" left by a reduction in traditional lending (Bruton et al, 2015), particularly for new ventures and inexperienced entrepreneurs who lack well established personal and professional networks by drawing on the "crowd" (Collins & Pierrakis, 2012). On paper, equity crowdfunding should be accessible to all start-ups, irrespective of their networks and location, due to the online nature of provision. Informational asymmetries mean that investors in the “crowd” have limited knowledge about the legitimacy of an entrepreneurial venture (Cassar, 2004; Shane & Cable, 2002), which is particularly pronounced in an equity crowdfunding context due to the fact that small investors also have limited experience evaluating investment propositions (Ahlers et al., 2015; Cumming & Johan, 2013). Therefore, firms seeking this internet-mediated form of funding must overcome these informational uncertainties with prospective investors through various forms of networking.

Indeed, the growing body of empirical work on crowdfunding strongly suggests that networks matter during the crowdfunding process (Colombo et al., 2015). For example, research examining projects funded through the Dutch crowdfunding firm Sellaband found that initial smaller investors tend to be local friends and family because “social ties yield awareness of the opportunity to invest (and perhaps exert some social pressure to do so)” (Agrawal et al., 2015, p. 268). Similarly, research by Ordanini et al. (2011) examining three different types of crowdfunding platforms (two donation-based platforms and one equity-based platform) found that contributions are primarily made by the close friends of crowdfundees. Other studies have also shown that the number of social media connections (specifically Facebook friends) is positively associated with the amount of capital raised through platforms such as Kickstarter (Frydrych et al., 2014; Mollick, 2014). However, one Australian study, using the share of non-executive directors on the firm’s board as a proxy for network capital, found no connection between social capital and the success of equity crowdfunding campaigns (Ahlers et al., 2015). Overall, however, the bulk of this rather limited evidence base on crowdfunding suggests that personal networks are capable of reducing informational asymmetries between entrepreneurs and investors.

However, this nascent crowdfunding literature has important shortcomings. First, most empirical research has focused on rewards-based or donation-based crowdfunding (Frydrych et al., 2014;

Mollick, 2014). For these campaigns investment decisions are often predicated on the interests and intrinsic motivations of investors (Mollick, 2014). We therefore need to be aware that the drivers of investment decisions (Mortiz et al., 2015), may vary quite considerably across different platform types (Ordanini et al., 2011). The fact that investors become interwoven into the fabric of the firm as a shareholder marks out equity crowdfunding as potentially a more relationally complex source of funding. Second, most studies have examined the role of network actors at the start of the crowdfunding process. However, as we will discuss subsequently, this is just one part of a firm's overarching crowdfunding journey; there is a need to better understand the role that networks play at different points during this process. This paper attempts to fill these gaps and contribute to the literature by conceptualising the equity crowdfunding process by exploring the changing nature and role of networks at different points along this process.

3. Methodology

3.1 Method and Data

In line with the majority of entrepreneurship research (Suddaby et al., 2015), most research on crowdfunding has taken a quantitative approach (e.g. Belleflamme et al., 2014; Mollick et al., 2014). Scholars have called for more qualitative work on crowdfunding to better understand the nuances of this process as well as the benefits, both tangible and non-tangible, it confers on recipient firms (Brown et al., 2015; Frydrych et al., 2015; Moritz et al, 2015). Corporate interviews have been found to be a useful technique when unpacking the "multifaceted, temporally unfolding situations and causal mechanisms" (Graebner et al, 2012 p. 279) within complex environments and have been used as the primary method of data collection for this research.

In-depth semi-structured interviews were conducted between February and October 2015 with entrepreneurial founders from start-ups that had successfully completed the crowdfunding process on one of the three main equity platforms in the UK.[3] Of the 284 companies approached, 63 participated in our study – a response rate of 22%. It is important to note that only around 40% of firms successfully raise equity crowdfunding (Financial Times, 2015), so in some respects this is a biased sample of highly skilled and successful entrepreneurs. Interviews were conducted via telephone and were on average approximately 45 minutes in length. They were recorded and transcribed immediately upon completion. To triangulate emerging themes from the corporate interviews, a small number of interviews (n=8) with crowdfunding platforms, business angels and incubators were also undertaken (Patton, 2002).

Data was analysed based on a coding framework developed from the network and crowdfunding literature, although a number of themes and codes emerged from the data analysis process. Each transcript was analysed independently by the researchers, before codes were compared and reassessed by the researchers in order to ensure analytical rigour (Guba & Lincoln, 1994). While direct quotations are used to ensure transparency of collected data (Healy & Perry, 2000), company names and crowdfunding platforms have been anonymised at the request of participants.

3.2 Cohort Characteristics

The companies in the sample were an average of 3 years old. Only 5% were older than 10 years of age, with approximately 50% under 3 years of age. They were all SMEs and the majority employed less than 10 people. Most companies are operating in the B2C sphere (consumer goods, food and drink, personal services), with about one quarter operating in B2B (aviation, clean tech, business technology). There were very few genuinely "high tech" R&D intensive firms (less than 5%). The firms were spatially concentrated in the London and South East, with a handful outliers in the north of England, Cornwall and the central belt of Scotland. This is very much in line with the overall demand for equity crowdfunding, which is heavily concentrated in London and South East England (Baeck et al., 2014; British Business Bank, 2014). Firms in our sample raised an average of £523,857

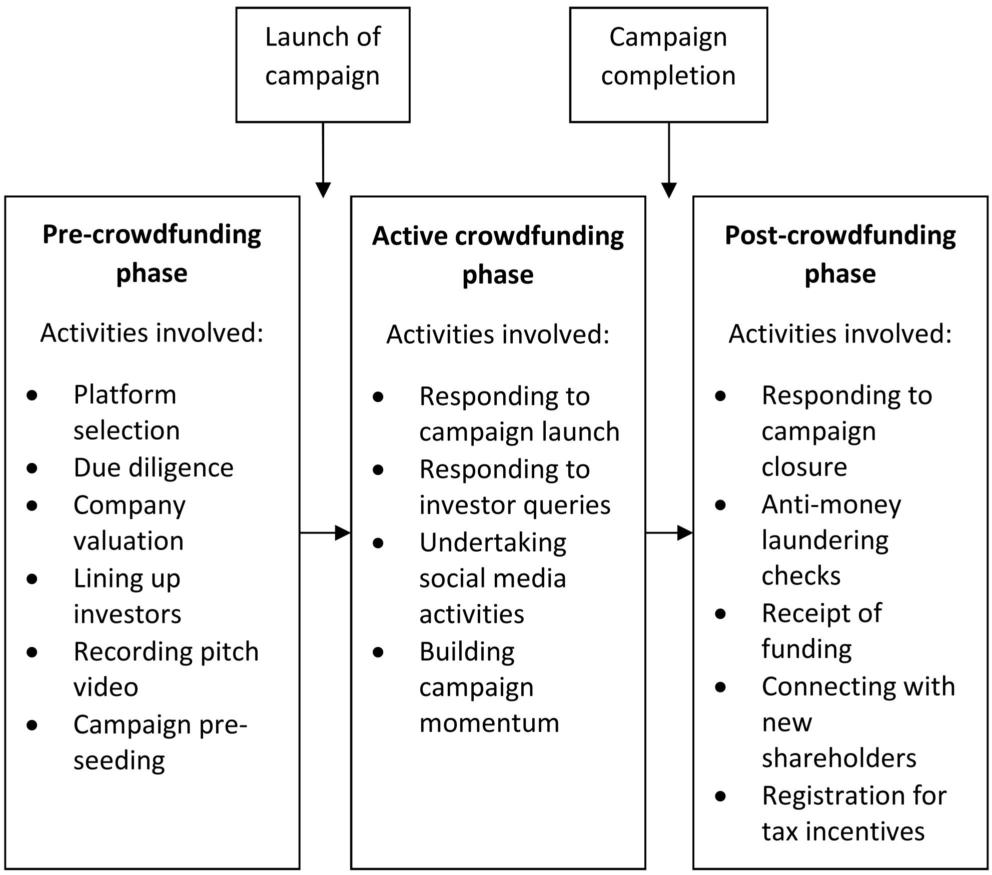
[3] There are a growing number of equity platforms in the UK. The three main platforms, which were targeted for this research, are Crowdcube, Seedrs and The Syndicate Room.

for 18.55% equity to an average of 216 investors. One firm in our sample had a considerably larger number of new investors (2,375). Excluding this firm from the analysis, the average number of investors was 159.

4. Findings

The crowdfunding process has three key phases: pre-crowdfunding phase (before the official campaign launch); active crowdfunding phase (campaign launch to campaign completion); and post-crowdfunding phase (after campaign closure) (see Figure 1)[4]. Empirical findings will now be detailed in relation to each of these phases.

Figure 1. The Crowdfunding Process



4.1 Pre-crowdfunding phase

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[4] The length of the crowdfunding process varies between firms. In our sample, this ranged from 9 days to 6 months.

For all the firms in our sample, the rationale for pursuing equity crowdfunding was heavily mediated by personal networks based on strong ties. Often the decision to use equity crowdfunding was due to a lack of relationships with other funders such as banks, which informed their appraisal of different options. However, the rationale for using crowdfunding often went beyond simply accessing funding. Whilst some firms came to this decision quickly, particularly if access to finance was a critical concern, the majority took some time to consider equity crowdfunding as a funding option and to evaluate how this would work for their own particular businesses.

> "*We then moved to equity crowdfunding because it's so similar to what we do: it's all about a social network.*"

> *"We needed a platform that understood the sharing economy – that's our business. A platform that was social and where we could speak to a human being and where we're receiving a personalised service. I can speak to them personally."*

In terms of initial awareness and consideration of crowdfunding, referral via personal networks was a critical factor for the vast majority of firms in our sample. Many entrepreneurs noted that they were encouraged to look into equity crowdfunding by friends, family and business colleagues. In some cases, the referent had personal experience with crowdfunding, but more commonly they had knowledge of crowdfunding from their own wider network. The nature of referent experience appears to have an effect on how entrepreneurs were introduced to both the concept of crowdfunding and to different platforms – entrepreneurs directed into crowdfunding via referents with first hand crowdfunding experience were less likely to have explored a variety of crowdfunding concepts and platforms, choosing to follow in the footsteps of their peers.

> *"In the end it was a bit of a relationship deal. There was a guy I'd met a few years ago before and he was working with [Crowdfunding Platform] and I liked what he was doing and saying so we went in that direction."*

Just under half of our sample firms were involved in a business incubator or accelerator programme when they first encountered and considered crowdfunding as a possible finance option. These firms were all directed to crowdfunding by their respective programmes, and were again heavily influenced by personal recommendations of specific platforms.

> *"I was talking to my finance guy [at Accelerator] – talking about the banks – he proposed the meeting with [Crowdfunding Platform] as an option for us and he knew most of the crowdfunders so he made an introduction. We sent over our stuff and we were put in touch with one of their guys pretty quickly."*

> *"The access to finance part of the [Accelerator] helped me make the contacts with regards to crowdfunding at [Crowdfunding Platform]."*

> *"We heard about [Crowdfunding Platform] through [Accelerator] – we met with the founder and said that it would work very well on their platform."*

The nature of ties to various existing investors meant that the process of using crowdfunding was somewhat path dependent. This was particularly the case amongst firms who had been referred to particular platforms by their shareholders.

> *"[Crowdfunding Platform] were the recommended platform from our shareholders so that's just where we went."*

> *"Our investor group who had invested in us previously had discovered [Crowdfunding Platform]. Knowing people and knowing a track record/relationship is important so we went with them."*

> *"There was no question who we were going to talk to. Our investors knew the people at [Crowdfunding Platform]. If I had said I wanted to talk to [other Crowdfunding Platform] they would have said I was nuts!*

It was also noted how the overall crowdfunding ecosystem was cumulatively driving firms towards equity crowdfunding. Crowdfunding platforms are now running numerous events and, in some cases, use personal networks to contact firms who could potentially become customers. One respondent even noted that their bank, one of the UK's "big 4", was referring potential customers on to their preferred equity crowdfunding platform if they felt that they wouldn't meet the requirements for a business loan.

> *"We were interested in experimenting with crowdfunding and were introduced to [Person at Crowdfunding Platform] by both [Accelerator] and [Business Support Programme]. [Person at Crowdfunding Platform] invited us to an event they were running which was great. We are both in [City] and we know the same people. They already knew who we were and we already knew who they were."*

> *"[Crowdfunding Platform] approached us – they had heard about us and wanted to use us as a case study. Fortunately we'd been looking into equity crowdfunding for a year or so, so the approach came at the right time."*

In the run up to a campaign, entrepreneurs devoted a lot of time towards interacting with the platform itself. This was due to the platform undertaking due diligence on the veracity of the firm's business plans; it also involved entrepreneurs working with a platform to value the firm. As one entrepreneur noted, "it takes away the valuation argument in a deal". During this time entrepreneurs really valued having strong connections with the platforms, particularly as many of them were crowdfunding for the first time and required more support.

> "*You definitely have much better engagement than you'd ever get from a bank manager or a VC – much more of a 2 way street.*"

"Every single statement you make is trawled over by [Crowdfunding Platform] lawyers. They have to be backed up – very hands on. They gave us advice to seek investors beforehand to build up momentum very quickly."

Just as platform identification and selection was heavily mediated by personal recommendation, so too were the early decisions related to setting up a crowdfunding campaign. The importance of "pre-seeding" crowdfunding rounds has been recognised in the literature as a critical enabler of campaign success (Agrawal et al., 2015; Ordanini et al., 2011) and each of the firms interviewed had arranged for their campaigns to be pre-seeded (on average 1/3 of the campaign's value). To do this, entrepreneurs went out to their networks, predominantly friends, family and previous investors, to raise the required capital to stimulate this "herd" effect.

"*Without an established network, or investors, it's incredibly difficult to raise the finance [needed to crowdfund]."*

"We reached out to friends and family for initial funding. It's difficult with targets – you have to have a minimum amount and if you don't hit it then you don't get any of the cash."

"We created out own sort of crowdfunding process – we approached family, friends and an angel investor."

"We did have to raise a lot of the money ourselves. We raised £1.1m ourselves with help from our friends and investors and we pre-seeded the crowdfunding round with that money. We wondered 'why don't we just look for a few more angel investors and forget this crowdfunding malarkey', but we agreed that crowdfunding had a useful purpose in pinning down the value of the business and that's what it did.

4.2 Active crowdfunding phase

During the active campaign phase, firms engaged in a different manner of looser or weak network ties. Rather than leveraging their own network for advice, support, capital etc., entrepreneurs were more focused on developing new ties and trying to further build their network by interactions with potential new investors via the crowdfunding platform. The majority of respondents noted that the nature of the online platform meant that engaging with prospective investors was far easier than traditional methods such as cold calling, with the platform helping to bring firms together with like-minded individuals.

> *"[Crowdfunding Platform] allows information to be quickly exchanged between parties to get people interested and ready to commit – until people commit to an idea it's just an idea."*

Importantly, firms noted that whilst the online platform allowed for easier interaction with prospective investors, engaging these individuals still required time and effort. The majority of companies noted that it was time consuming to fulfil requests for business plans and further information on the company, particularly when there was no guarantee that enquiries would result in investment. There was however recognition that these interactions had the potential to lead to new network ties, even if there was no subsequent investment.

> *"Some [investors] would grill us – loads of questions, relevant and interesting for a week or whatever and invest £50 and some who didn't even request the business and subsequently invested thousands. You just don't know."*

> *"We started life as an e-commerce website. We could have easily gone out to private investors to use, but the community has been so important to our business and is still so important to our brand so we wanted to give them a chance to get involved. Not everyone that wanted to invest could, but even getting people to hear about us and maybe buy or product in their local store is a great outcome."*

In many cases, these interactions led to engagement with business angels for the first time. Business angels have been observed to be increasingly active on crowdfunding platforms (Baeck et al., 2014), and nearly two thirds of our respondents noted that they had engaged with business angels via the crowdfunding process. This was particularly important to those firms who lacked network contacts in this funding space.

> *"We had wanted angels but didn't have a well-developed network and couldn't have in depth conversations with any of them before [starting crowdfunding]."*

> *"I think it opens the doors for a lot of SMEs who might not have the network in order to find private angels."*

> *"Angels often have their own networks, but they now seem to be concentrating themselves in online equity platforms so they're easier to access."*

The process of undergoing a successful campaign was viewed as a key event for many entrepreneurs in terms of the investor networks it created. Regardless of whether new ties were with business angels, other professional investors, or members of the "crowd", respondents were very clear about the desire to build a relationship with each of these individuals during the crowdfunding process that could be further developed and leveraged over time.

> *"It sort of validates companies because you're in the spotlight and a lot of people are looking at you, and if you succeed, then it opens all kinds of doors. People take you more seriously and the networks you can create are also very beneficial."*

> *"The sheer number [of new ties] is great, so we now have a database of all those people, all of whom we can reach out to."*

4.3 Post-crowdfunding phase

Upon completion of the crowdfunding campaign (from the point when the campaign officially closed) crowdfunding often resulted in *"more than money"*. Although finance was a key motivational driver for some entrepreneurs, the vast majority of entrepreneurs saw equity crowdfunding as an opportunity to raise awareness and support from new individuals and looked forward to building relationships with new contacts arising from the process.

> "*The feedback from the advertising and the publicity of it were all beneficial to the company as a whole, not just the finance.*"

Nearly every firm interviewed noted that one of their first actions *ex post* was to engage with new investors and to start the process of developing and strengthening relationships. This was considered to be a significant benefit.

> "[*Crowdfunding] has allowed us to become involved with investors we hadn't met before – to start building new relationships*."

> "*For example, we've created some amazing financial models with one of our investors because financial modelling is what he does. We've also had recommendations from someone who's put us in touch with interesting people and have helped us make great contacts.*"

Despite the interest in engaging with new contacts and widening their networks, most of the firms perceived only small changes in the size of their networks. Despite firms gaining a rapid influx of new shareholders, some respondents felt that their networks were not substantially different and that they had "*changed very little over the crowdfunding process."* This may be due in part to the fact that over half of the companies interviewed had drawn heavily on existing networks to raise finance and thus not all investors were "new" ties to the business.

> *"The reality is, at the end of the day, the crowd as a 'group of unknown strangers' actually made up a small proportion of our funding. We really looked to the relationships we'd built*

over the last couple of years and leaning on them to come in and fund the business. It was a way for everybody to get on board and move forward with confidence."

"I wouldn't necessarily say that crowdfunding actively changes your network because what's great about crowdfunding is that it gives you a platform to bring on the people that you already have in your network."

"[Crowdfunding] allows you to develop and access your own network and their networks of investors."

Interviewees were reluctant to share details of exactly how many "brand new" investors came from the crowdfunding round, but of those willing to disclose such figures the average was approximately fifteen percent. Given the comparatively small growth of networks arising from the crowdfunding process, it is understandable that respondents emphasised the importance of further building relationships with network ties, both new and old. There was widespread awareness that they would need to leverage their networks again in the near future, particularly in terms of raising subsequent rounds of finance and further developing their business.

"We are turning to another round next month. I don't really think we even need to go through [Crowdfunding Platform]. I can just write a letter to my external investors from [the last round on Crowdfunding Platform]."

"Some of the biggest investors who came to us through [Platform] are proving to be invaluable to our business due to their skills and network – it's entirely in their best interest to help us as much as possible and increase the size of their slice of our pie!"

It is important to note, however, that engagement with new investors was not always easy for firms, with many noting that such engagement was time consuming and took management time away from core business decisions. Difficulties managing the uplift in new stakeholders was a common observation, with many firms wondering how they would be able to maintain engagement in the longer-terms with a range of different individuals.

> *"There are downsides [to crowdfunding] – you can end up spending most of your time sorting the stakeholder management of the investors and this is something that concerns me going forward."*

5. Discussion

5.1 The Network Dynamics of the Crowdfunding Process

To properly understand of the role of networks in equity crowdfunding, it is vital to distinguish between different phases which comprise the "crowdfunding event". Under this processual perspective we can see that networks undergo substantial change during the crowdfunding process which helps delineate and comprehend the rich empirical findings reported in this paper.

Table 1. The nature of networks in different phases of equity crowdfunding

	Pre-crowdfunding	**Active crowdfunding**	**Post-crowdfunding**
Type of network ties	Strong ties	Weak ties	Strong ties
Relational Nature of Network ties	Personal	Mostly business	Personal and business
Duration of networks	Long term	Long, short term, ad hoc	Long and short term

Role of network ties	-Key role for strong ties (friends, family and existing network). -Referral to CF platform and strong influence on where and how firms engage in CF. -Reliance on strong ties to pre-seed CF round to make CF viable. -Strong interactions with chosen platform	-Continued support from strong ties (friends, family and existing network). -Active development of new contacts (weak ties) via interactions on crowdfunding platforms. -Engagement via social media and other interactions (e.g. business plan requests). -Interaction with the goal of ultimately influencing investment	-Continued reliance on strong ties (friends, family and existing network) for advice, support and further funding. -Active conversion of weak ties into strong ties. -On-going engagement to strengthen new relationships.

During the pre-crowdfunding period, powerful network enablers strongly influenced and encouraged the entrepreneurs to pursue equity crowdfunding. Most of these were "strong ties", such as friends, family, current investors and peers. This "word of mouth" referral process seemed to be a key aspect of the crowdfunding process and interactions with strong ties within personal and professional networks often helped to allay any concerns. Indeed, network interactions between entrepreneurs and their peers are recognised to be a critical way to help entrepreneurs "handle such ambiguity" (Ciabuschi et al., 2012, p. 227). The pre-crowdfunding phase is perhaps the most crucial aspect of the equity crowdfunding process, as failure to properly engage with the right kind of networks can fatally undermine the success of a crowdfunding campaign.

Close ties also emerge between the platforms and the entrepreneurs, not least because of repeated interactions during the due diligence processes undertaken. Through this recursive process the entrepreneurs become passionate supporters of the platforms. Indeed, through this self-confirming and pro-social behaviour amongst crowdfunded entrepreneurs see them become advocates of the process who them help other firms with their campaigns. Most of the entrepreneurs in our study had benefitted from discussions with other firms who had "*been there, done that"*, providing further evidence of high levels of *internal social capital* within the crowdfunding "community" (Colombo et al., 2015) [5]. It is important to note that as this study covered some of first cohorts of start-ups to use equity crowdfunding, so-called "early adopters" (Brown et al., 2015), similar findings may not be evident in future work on equity crowdfunding.

Spatial proximity also appears to play a key role in shaping pre-crowdfunding network interactions. These tended to take place either with personal networks or other start-ups, often via the conduit of incubator or accelerator programmes, which many of the firms inhabited. Close proximity and repeated exposure to crowdfunding platforms also seemed to foster network ties. As networking events by crowdfunding platforms tend to be organised in London, where the majority of platforms are located, it seems no coincidence that the vast majority of crowdfunding deals in our study and in other work (e.g. Baeck et al., 2014) are spatially proximate to London. The spatial boundedness circumscribing the main crowdfunding community in the UK corresponds closely to other forms of equity-based entrepreneurial finance (Martin et al., 2005; Mason & Pierrakis, 2013). The contrasts with other findings (Agrawal et al., 2015) and suggests the "geography" of equity crowdfunding warrants further empirical research.

Network ties were also important for firms to "pre-seed" their crowdfunding campaigns. This pre-seeding, based on strong/known ties, gives new deals momentum which then draws in other unknown investors (i.e. weak ties) and is closely associated with the success of crowdfunding campaigns (Colombo et al., 2015). Our findings revealed that entrepreneurs leveraged established connections with business angels to help them to pre-seed and to raise finance via crowdfunding. This form of network "piggybacking" of pre-existing strong ties emphasises a sense of "path dependence" (Hite, 2005) in the nature of network relationships in the crowdfunding process.

[5] In one instance, an entrepreneur who had successfully raised crowdfunding was contacted by half a dozen other firms in pursuit of his advice on how they could embark on a crowdfunding campaign.

The nature of network interactions and engagement differed quite markedly between the pre and active crowdfunding phases. Whilst existing relationships and strong network ties were a critical part of the pre-crowdfunding phase, once a campaign went live, entrepreneurs focused less on their existing ties and more on engaging with new ties via the crowdfunding platform. This is perhaps unsurprising, given the nature and volume of information requests respondents received once their campaign went "live". Strong ties remained important, but more so for moral support rather than for strategic guidance or other inputs. Via the crowdfunding platform, links to other entrepreneurs who had raised equity crowdfunding – as well as links directly to the wider crowd – become the focal point for entrepreneurs. These weak ties were considered crucial to enable the firms to successfully access their target funding. Social media was widely used, not only to engage with potential investors, but also to help build a sense of momentum for the campaign, which is recognised to have an important effect on the "herding" behaviour of investors (Moritz et al., 2015).

Upon completion of the crowdfunding campaign, the "relational mix" (Lechner et al., 2006) of ties changed once again. During this phase, the focus of entrepreneurs shifted to harnessing weak ties, particularly connections with new investors. At this juncture, what seemed to happen was that some previously weak ties, such as links to new investors (both large and small), begin to change and become stronger. This occurred due to increased interactions between the firm and their new investors, drawing on new shareholders as sources of advice, co-creators of new knowledge, brand ambassadors and new customers.

In sum, networks are of critical importance during the crowdfunding process, with each phase of the process focused on different aspects of network development and interaction (see Table 1). What seems to characterise this process is a transition from personal strong ties which then foster engagement in wider business networks predicated on weak ties. The desire to develop and "harden" these weak ties is perhaps the most fluid and dynamic aspect at the end of the crowdfunding process and requires further empirical scrutiny.

5.2 Relational Benefits arising from the crowdfunding process

A number of distinct relational and network benefits arose out of the crowdfunding process in its entirety. The crowdfunding literature notes that crowdfundees derive various network benefits from crowdfunding process; our empirical findings strongly corroborate this. One major benefit of crowdfunding for firms is the organisational legitimacy it confers on start-ups (Frydrych et al., 2014). Given that platforms have to vet firms and undertake due diligence in advance of launching a campaign, a listing on a crowdfunding platform acts as a positive signal of legitimacy to potential investors, similar to the concept of "reputational networks" in the networking literature (Lechner & Dowling, 2003). This results in increased visibility and heightened levels of trust for potential investors, a crucial benefit for informationally opaque new ventures (Welter & Smallbone, 2006). This positive signalling connects ventures with a wide array of other potential investors, especially business angels. Indeed, many of the interviewees mentioned how the crowdfunding process had alerted other potential investors to their firms, many of whom were previously unknown to the entrepreneur. Being able to successfully raise crowdfunding could act as a "signal" of quality to uniformed third parties, which in turn could further facilitate future investment (Ahlers et al., 2015; Hsu, 2004).

In line with a range of other authors, the data also reveals considerable non-tangible benefits from interacting with crowd investors (Belleflamme et al., 2014; Lehner et al., 2015). These are often unanticipated outcomes, whereby entrepreneurs benefit by becoming better connected to customers and investors. Factors such as media exposure, interaction with new shareholders, end-user engagement and feedback were all important intangible network-related benefits that firms received from this type of funding. Indeed, investors in crowdfunding often become quite vocal and proactive in their engagement with these firms. In turn, entrepreneurs use these new networks to gain media exposure for their venture and to receive customer feedback on product development[6].

Through these interactive feedback loops between entrepreneurs and investors, important entrepreneurial learning can occur (Belleflamme et al., 2014; Gerber & Hui, 2013; Ordanini et al., 2011). Scholars claim that the ties between firms from different backgrounds can increase their ability to access a high volume and variety of information (Stam & Elfring, 2008) or "network knowledge heterogeneity" (Sullivan & Ford, 2014). The findings reported therefore corroborate that crowdfunding platforms are not only intermediaries of monetary transactions, but also important "*loci* of social connections" (Colombo et al., 2015, p. 76).

However, it is important to note that increased network interaction presents considerable managerial challenges to most growing firms (Möller & Halinen, 1999). Given that crowdfunding fosters a wide array of new stakeholders, it may in some cases distract, or indeed, overwhelm some start-ups as highlighted during our interviews. Managing these new stakeholder relationships and complex interdependencies, whilst avoiding managerial or "stakeholder overstretch", is critical if firms are to thrive in this environment. Therefore, orchestrating and maximising the benefits, both financial and relational, from equity crowdfunding requires significant levels of entrepreneurial orientation (Lumpkin & Dess, 1996) which may be beyond the reach of less capable or indeed risk averse entrepreneurs.

6. Conclusions and Research Limitations

This paper makes two key contributions to the network literature. First, it presents rich and unique empirical insights into the role of networks in equity crowdfunding. Our empirical findings demonstrate the important role different types of entrepreneurial networks – personal and professional, strong and weak, close and far – play in mediating the equity crowdfunding process for

[6] One example of this was a UK microbrewery, which held a meeting of all their new investors in order to undertake tastings and ratings of their latest range of beers.

start-ups. While crowdfunding networks help start-ups access funding, equally they stimulate and provide a conduit for wider boundary spanning interactions with powerful network actors. These network effects mark equity crowdfunding out as a distinctively "relational" form of entrepreneurial finance, drawing heavily on both pre-existing and new ties on a variety of dimensions. The findings therefore call into question the view that internet-mediated funding mechanisms are some kind of anonymized, transactional, spatially and socially dis-embedded forms of finance for start-ups.

Second, this paper extends entrepreneurial network theories by adopting a dynamic processual perspective combining both SN and BN perspectives. How entrepreneurs manage these multiple and inter-related personal, professional and business networks is vital to understanding how equity crowdfunding operates. The adoption of this perspective undoubtedly aided our understanding of the complex temporal processes at play. Looking across the wider business ecosystem revealed that network connections to business incubators, accelerators, VCs, business angels, consultants, intermediaries and government regulation were all shown to shape the crowdfunding process in its entirety. Analysing how wider systemic forces shape entrepreneurship is gaining traction within the entrepreneurial ecosystems literature (Nambisan & Baron, 2013; Spigel, 2015) and may offer an interesting point of departure for network scholars examine the full spectrum of the relational dynamics within complex business networks such as crowdfunding.

There are clear limitations with this exploratory empirical study, offering researchers ample scope for further empirical research. In common with the vast majority of studies examining networks, a cross-sectional perspective was adopted (Greve & Salaff, Sullivan & Ford, 2014). Clearly, adding a time dimension would aid the richness and veracity to the findings and the authors intend to further track these firms to enable a longitudinal study of their progression. A second potential drawback from this study was its focus on firms who had successfully obtained equity crowdfunding. Further research might benefit from exploring the reasons why some firms fail to obtain it. One conjecture being that failure to obtain crowdfunding may correlated to having less extensive network connections. We hope this study encourages others to examine this rapidly moving relational form of entrepreneurial finance in other spatial and regulatory environments.

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