Crowdfunding networks: Structure, dynamics and critical capabilities

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Abstract

Crowdfunding platforms – bringing together entrepreneurs, investors and customers – have grown rapidly over recent years. Crowdfunding networks are open, multisided markets that match founders and funders on crowdfunding platforms. The unique structure of these networks blends social and business networks and comprises a complex array of closer and more distant network relationships. Research investigating the characteristics of these open and highly dynamic network structures is in its infancy and capabilities critical to operating in them are under-explored. Thus, this study follows an abductive reasoning process to understand critical capabilities for influencing and orchestrating crowdfunding networks. It draws on a thematic content analysis of 1,484 blog entries written by crowdfunding experts and a comprehensive review of (i) literature on crowdfunding networks and (ii) five literature streams dealing with dynamic capabilities in evolving network structures. As a substantial contribution, this research delineates a portfolio of four collaborative capabilities – visioning, dynamic business modelling, engaging, and attaining social continuity – essential for operating successfully in crowdfunding networks. These new collaborative capability sets assume a new understanding of agency as a continuum of managerial and collective agency, an understanding that is novel within the network management and the capabilities literature.

Keywords: *Crowdfunding, platform businesses, dynamic capabilities, network management, collaborative economy*

1. Introduction

'I understood from the earliest stages that to make my idea a reality I needed a great deal of help and support from like-minded people. From my very first interaction with crowdfunding I recognised it not only as a financing platform, but also a community building platform.'

– *Philip Martin, Founder Blanco Nino Tortilleria*

Crowdfunding as a phenomenon of the collaborative economy has emerged as a novel source of capital for entrepreneurs (Burtch, Ghose, & Wattal, 2013). Crowdfunding refers to *efforts by entrepreneurs to fund their ventures by drawing on relatively small contributions from relatively large numbers of individuals* using the internet, without standing financial intermediaries (Mollick, 2014). Crowdfunding platforms such as Indiegogo and Kickstarter have gained much attention for enabling organizations and individuals to raise funds from crowds of ordinary people (Brown, Boon, & Pitt, 2017). These platforms have grown dramatically in recent years (World Economic Forum, 2016), with the sector's turnover rising from $US2.7 billion in 2012 to $US 34.4 billion in 2015 (Masssolution, 2016) and its global impact expected to grow further (World Economic Forum, 2016). Several now well-known start-ups, such as Oculus, have their origins in crowdfunding projects (Brown et al., 2017). Traditional organizations, banks especially, have also recently launched their own crowdfunding platforms. However, frameworks to understand how entrepreneurs and managers operate and position successfully in crowdfunding networks lack scientific scrutiny to date.

Crowdfunding networks have a unique network structure. They are described as twosided markets orchestrated by crowdfunding platforms that match founders with funders (Eloranta & Turunen, 2015; Rochet & Tirole, 2003). They differ from other platforms in the sharing economy, such as dating (e.g. Tinder) and real estate (e.g. Airbnb), because they don't provide a one-to-one but a one-to-many matching mechanism (Belleflamme, Omrani, & Peitz, 2015). Crowdfunding networks involve an extensive number of actors with 'fluid' memberships based on close and more distant ties and no formal inclusion or exclusion criteria (Brown, Mawson,

& Rowe, 2018; Dagnino, Levanti, & Mocciaro Li Destri, 2016; Möller & Halinen, 2017). These networks are open and consist of a complex array of personal and business relationships (Brown et al., 2018).

Initial academic work exploring crowdfunding networks has focused on the essential role that (social) network size plays in crowdfunding success (e.g., Burtch, Ghose, & Wattal, 2013; Lin, Prabhala, & Viswanathan, 2013). However, early empirical evidence suggest that a more complex and dynamic interplay between versatile actors in the closer and more distant networks around the founder determines crowdfunding success (Lehner, 2014). This emerging stream of literature that views crowdfunding from a dynamic process perspective (Brown et al., 2018) is examining how new ventures leverage open network structures to shape 'ready' markets for new products and services (Brown et al., 2017). This literature is in infancy and capabilities for operating successfully in these complex open network structures remain largely under-explored.

Thus, the purpose in this paper is to explore *critical capabilities for successfully operating and collaborating in crowdfunding networks*. We began our work by raising three expectations regarding capabilities in open network structures not yet addressed in existing capability literature. First, given that crowdfunding networks are typically ephemeral and decentralised, we expected network capabilities to be 'softer' (Möller & Halinen, 2017), with the aim of influencing or orchestrating rather than managing the entire network. Second, we anticipated that capabilities in open network structures would differ from business networks in terms of the degree to which the founder can control capability deployment and related outcomes. Third, due to the central role of social-network relationships, we expected that capabilities in evolving crowdfunding networks would probably include some sort of social capacity. We applied an abductive reasoning process to analyse capabilities in crowdfunding networks, drawing on rich empirical data from 1,484 crowdfunding blog entries written by crowdfunding experts, and also

on five literature streams pertaining to five forms of capabilities: *dynamic* (Eisenhardt & Martin, 2000; Teece, 2007; Teece, Pisano, & Shuen, 1997), *entrepreneurial* (Alvarez, 2001; Maguire, Hardy, & Lawrence, 2004); *network* (Möller & Halinen, 2017; Nordin, Ravald, Möller, & Mohr, 2017; Perks, Kowalkowski, Witell, & Gustafsson, 2017), *marketing* (Day, 2011; Morgan, 2012), and *commercialization capabilities* (Aarikka-Stenroos, Sandberg, & Lehtimäki, 2014; O'Connor & DeMartino, 2006; Story, O'Malley, & Hart, 2011).

The present research offers three specific contributions. First, in response to Mollick's (2014) call for more theory building regarding the dynamic process of crowdfunding, we delineate from our extensive review of the literature, the characteristics of crowdfunding networks. Second, we pin down a portfolio of *collaborative capabilities* critical for operating and collaborating successfully in crowdfunding networks: *visioning*, *dynamic business modelling*, *engaging*, *and attaining social continuity*. These capability sets contribute to value creation on two levels: the focal actor (i.e., the founder) and the network. Our research thus broadens the perspective of value creation from the current dominant firm-centric understanding of value creation in the existing capabilities literatures to a network-centred understanding of value creation. And, third, we broaden the understanding of capabilities by shifting the focus from one centred on executing managerial agency to one centred on operating with collective agency, and from one centred on predictors of success for focal actors or networks to one centred on predictors of value creation in the system as a whole.

In keeping with Gioia, Corley, and Hamilton (2012), we employ the traditional structure in this paper of a literature review followed by our methodology and findings. However, because we used the principles of abduction during our study, our data analysis guided our consultation of relevant literature, and vice versa, over multiple iterations. This paper will be presented as follows. First, we review the extended literature on crowdfunding networks. Next, we discuss three capability sets relevant for operating and collaborating in emerging networks

derived from the five capabilities literatures. In the third section, we introduce the abductive reasoning approach as the method to systematically combine the outcomes of our literature reviews with the rich insights on crowdfunding success we extracted from the 1,484 blog entries. A description and discussion of the four collaborative capability sets arising out of our abductive reasoning process are presented in section four. Finally, we discuss the theoretical advances and managerial implications as well as the limitations of our research.

2. Theoretical Framework

2.1 Research on crowdfunding networks

Crowdfunding began gaining mainstream traction with the launch of the crowdfunding platforms Indiegogo in 2008 and Kickstarter in 2009. That development prompted an exponential increase in worldwide crowdfunding initiatives, with the money raised increasing from $US2.7 billion in 2012 to $US234.4 billion in 2015 (Masssolution, 2016). The first academic publications on the phenomenon began appearing in 2010/2011. Ordanini, Miceli, Pizzetti, and Parasuraman (2011), Belleflamme, Lambert, and Schwienbacher (2010), and Lambert & Schwienbacher (2010) laid the conceptual foundation for crowdfunding as a phenomenon that *involves an open call – through the internet – for a collective effort to invest in and support other individuals or organizations.*

The academic database Scopus indicates that research on crowdfunding gained particular momentum in 2013, with the publication of 257 academic articles predominantly in the fields of business and management, social science, economics, and computer science. Based on the ABDC journal quality list (http://www.abdc.edu.au/pages/abdc-journal-quality-list-2013.html) we identified 76 of these articles as high-quality ones (A or B gradings) within the fields of management, marketing, and service science, and these were the ones we analysed in detail during our study.

Most of the academic discourse on crowdfunding can be found in the entrepreneurial literature. Marketing and service research has paid, with a few notable exceptions (Brown et al., 2018; Hu, Li, & Shi, 2015; Lacan & Desmet, 2017; Quero & Ventura, 2018), minimal attention to the phenomenon. As Mollick (2014) emphasized, little is known about the field of crowdfunding from an academic, theory-building perspective. By highlighting the characteristics of crowdfunding networks discussed in the literature (for a summary, see Table 1), this section of our paper lays the *foundation for a dynamic perspective of network formation* aimed at casting light on *the complexity of operations and collaboration in crowdfunding networks*.

2.1.1 Network structure

The crowdfunding literature defines crowdfunding networks as two-sided markets (Belleflamme et al., 2015; Bouncken & Komorek, Malvine, Kraus Sascha, 2015; Lacan & Desmet, 2017), which means the crowdfunding platform provides a matching service between two sides of a market – founders and funders (Eloranta & Turunen, 2015; Rochet & Tirole, 2003; Thomas, Autio, & Gann, 2014). Belleflamme et al. (2015) argue that these markets in many cases did not exist before, meaning, markets are shaped through crowdfunding initiatives. Crowdfunding platforms differ from other platforms such as dating and real-estate ones in that they do not provide a one-to-one but a one-to-many matching mechanism, which is not surprising given that crowdfunding initiatives require extensive numbers of funders to be successful (Belleflamme et al., 2015).

Arguably, by definition, multisided markets refer to open network structures (Fehrer et al., 2018). Crowdfunding networks involve an extensive number of actors who, because they have only transient ties to one another, form 'fluid' memberships that lack formal inclusion or exclusion criteria (Brown et al., 2018; Dagnino et al., 2016; Möller & Halinen, 2017). In other words, crowdfunding networks are open and form around continuously emerging, non-

hierarchical collaborations among peers (i.e., founders and the crowd) (Ketonen-Oksi, Jussila, & Kärkkäinen, 2016). These informal ties require low tie-specific investments, and they often form spontaneously and serendipitously. Compared to networks of formal ties (e.g., between employers and employees), which have an upper limit for growth due to limited available resources, networks of informal ties are highly scalable because the pool of resources is not limited to a specific set of knowledge (Dagnino et al., 2016). Empowered by digital technology and sophisticated software that connects these informal ties highly effectively (Parker, van Alstyne, & Choudary, 2016), crowdfunding platforms produce a high density of resources (Caridà, Melia, & Colurcio, 2017).

2.1.2 Networks from a cross-sectional perspective

The focus in the majority of current crowdfunding literature has been on predicting the success of crowdfunding initiatives. These studies have typically extracted large data sets from crowdfunding platforms and applied regression analyses in order to estimate the likelihood of success. Success, in these studies, is commonly defined as reaching the funding goal of the crowdfunding initiative (Cha, 2017). However, social networks and the crowd can significantly influence crowdfunding success because they signify social capital (Granovetter, 2005). According to Lin et al. (2013), informal cues and social networks give credence to the founder's credibility (social capital) and thus increase the likelihood of securing funding. Burtch et al. (2013) also confirm that early crowd development is a beneficial means of building awareness of the crowdfunding initiative.

The social networks that develop around the crowdfunding initiative are just as important for crowdfunding success as the crowdfunding project's quality and its geographic proximity to the funders (Argwal, Catalini, & Goldfarb, 2015; Mollick, 2014). Josefy, Dean, Albert, and Fitza (2017) further accentuate the central role of the social community and the viability of the network for crowdfunding success. However, social networks and communities

differ considerably from traditional funding organizations (e.g., venture capitalists) with respect to motives, behaviours and decision-making. Chan and Parhankangas's (2017) finding that the crowd's decision-making processes and behaviour are more akin to consumer behaviour makes crowdfunding networks not only unique but also complex in comparison to traditional entrepreneurial or business networks.

Taken together, these cross-sectional studies (see Table 1) point to the essential role of social capital that comes with an emerging crowd. They also illustrate the social-network characteristics that determine the success of crowdfunding initiatives. However, the cross-sectional perspective of crowdfunding networks gives only limited insight into the dynamics of the entrepreneurial activity that informs the operations and collaboration practices occurring in such networks (Mollick, 2014). Lehner (2014) argues that the size of the initial networks around the founder alone seems inefficient as a predictor of success and that early empirical evidence points instead to a complex interplay between *versatile participants in the closer and more distant networks* around the founder.

2.1.3 Network formation from a dynamic perspective

The complex interplay between versatile actors in the crowdfunding network is evident in the emerging stream of literature on crowdfunding that views the phenomenon from a dynamic process perspective (Brown et al., 2018). This stream examines how new ventures *leverage open network structures*. Lehner (2014), while agreeing with the likes of Burtch et al. (2013) that crowdfunding success is based on the social capital of the founder, argues that the economic value that arises out of social capital depends on the cultural and symbolic capital created during the crowdfunding process. Colombo, Franzoni, and Rossi-Lamastra (2015) similarly demonstrate that internal social capital (the capital that develops during the early funding stage inside the crowdfunding community) reinforces value-creation processes inside and outside the initial community. Brown et al. (2018) further accentuated the need for an integrated approach

to analysing crowdfunding networks through their examination of both personal (social) networks and entrepreneurial (business) networks. The authors adopted a processual perspective to investigate the complex array of network actors and ties that develop during the crowdfunding journey.

According to Frydrych, Bock, Kinder, & Koeck (2014), positioning a person or organization as a founder in such complex network structures relies on the legitimacy of the founder, with that legitimacy built through interaction and collaboration between founder and crowd. Identification and control in crowdfunding networks are therefore based not on formal relationships (such as contracts) but on perceived legitimization and offered democratic participation (Lehner, 2014). Ley and Weaven (2011) point to the role of agency in crowdfunding networks and the importance of having agency-control mechanisms in place during the early stage of the crowdfunding process.

Mollick and Robb (2015) argue that crowdfunding, via the crowd, has the potential to democratize access to capital, a process that could drive future innovation in a completely new way. The authors suggest that crowdfunding's full potential can only be leveraged if the founder regards the crowd itself, not just the crowd's financial power, as an asset. By drawing together crowd, funding and open dialogue, crowdfunding can secure more than funding for a project; it can also help create a stable community around a new service or product. Di Pietro, Prencipe, and Majchrzak (2018) found that 'exploiting' the crowd, that is, integrating them through an open-innovation process, leads to more sustainable success for the crowdfunding initiative, with that success predicated on the funded product or service becoming commercialized.

The commercialization of innovation ties into the discourse on business modelling in the crowdfunding literature. Lehner, Grabmann, and Ennsgraber (2015) contend that because crowdfunding goes beyond the funding process, researchers need to address it as a bundle of processes leading to innovative entrepreneurial business models. Of relevance here is Quero

and Ventura's (2018) provision of a crowdfunding framework understood as a business model in which actors co-create value by developing another actor's value proposition. Gamble, Brennan, and McAdam (2017) also address crowdfunding as a growing phenomenon that shapes new business models and thereby affects both new and established actors in the market.

In summary, the coterie of scholars currently investigating dynamics in crowdfunding processes and dynamic formations of crowdfunding networks address some central questions regarding the structure and particularities of open networks. However, research directed towards identifying ways of succeeding in open network structures with their bricolage of social and business actors is still in its infancy, which is why we consider it important to identify the critical capabilities needed to operate and collaborate successfully in those structures.

Table 1. Selected key contributions informing the understanding of crowdfunding networks

Network perspective		Article	Main focus	Approach	Contribution to understanding crowdfunding networks
Network structure	*Crowdfunding networks as two-sided markets*	Bellflamme, Omrani, and Peitz (2015)	Provides a description of the crowdfunding sector, emphasising its key characteristics and the economic forces in play	Conceptual	Elaborates on the cross-group and within-group external effects of two-sided markets
		Bouncken, Komorek, and Kraus (2015)	Provides overview of crowdfunding literature	Conceptual	Describes crowdfunding in the context of two-sided markets
		Lacan & Desment (2017)	Uses the theoretical framework of two-sided markets, to investigate how choice of crowdfunding platform affects funders' willingness to participate in a crowdfunding project	Quantitative: structural equation model	Reveals that attitudes towards a crowdfunding platform moderate funders' willingness to participate
Cross-sectional network perspective	*Crowdfunding networks signalling social capital*	Lin, Prabhala, and Viswanathan (2013)	Investigates the effect of friendship networks and information asymmetry in online peer-to-peer lending	Quantitative: regression	Shows importance of social networks and informal cues for signalling a founder's credit quality and hence for successful funding
		Burtch, Ghose, and Wattal (2013)	Examines social influence (amount and timing of other funders) in a crowd-funded marketplace for online journalism projects	Quantitative: regression	Validates that crowdfunding is beneficial for awareness and attention-building around ventures
		Cha (2017)	Looks at factors that influence the success of crowdfunding campaigns within the context of video games	Quantitative:r egression	Identifies signalling factors (human capital, social capital and geography) that affect the success of crowdfunding
	Social networks determining crowdfunding success	Mollick (2014)	Offers a description of the underlying determinants of success and failure among crowdfunded ventures	Quantitative: regression	Suggests that personal networks, underlying project quality and geography are associated with crowdfunding success
		Agrawal et al. (2015)	Examines the role of geographical distance and how crowdfunding platforms can mitigate geographical distance	Quantitative: regression	Suggests that social networks rather than spatial proximity determines crowdfunding success in early project phases
		Chan and Parhankangas (2017)	Investigates the effect of innovativeness (radical versus incremental) on crowdfunding outcomes.	Quantitative: regression	Suggests, in a departure from most traditional entrepreneurial finance research, that crowdfunders behave mainly as consumers, and describes how such a role affects the relationship between innovativeness and crowdfunding outcomes
		Josefy et al. (2017)	Analyses the effects of community context on crowdfunding success	Quantitative: regression	Empirically validates the significant role of the community in crowdfunding success and the viability of the crowdfunding organization

Dynamic perspective of network formation	*Social capital and crowdfunding network formation*	Lehner (2014)	Provides a new understanding of entrepreneurial routes by using a sociological perspective	Qualitative: case studies	Discusses the complex interplay between the various participants in the closer and more distant networks around the entrepreneurs as they transform social capital into economic capital
		Colombo, Franzoni, and Rossi-Lamastra (2015)	Investigates the role of internal social capital for crowdfunding success	Quantitative: econometric analysis	Shows that the internal social capital proponents may develop inside the crowdfunding community provides crucial assistance in igniting a self-reinforcing mechanism
		Brown, Mawson & Rowe (2018)	Novel integrative approach towards the analysis of entrepreneurial networks by examining both personal and business networks involved in the equity crowdfunding process.	Qualitative: interviews	Shows that networks and social capital play a critical role in the crowdfunding process; start-ups leverage, build and draw upon a complex array of network actors and 'ties' as they traverse the different stages of their crowdfunding journey
	Formation of legitimacy and agency in crowdfunding networks	Frydrych, Bock, Kinder, and Koeck (2014)	Understanding, how rewards-based crowdfunding projects establish and demonstrate legitimacy in a virtual, impersonal context	Quantitative: descriptive statistics	Gives a nuanced picture of legitimacy formation during rewards-based crowdfunding
		Ley and Weaven (2011)	Investigates, from the venture capitalist's perspective, the agency dynamics relevant to adopting crowdfunding investment models in start-up financing	Qualitative: interviews	Highlights agency control mechanisms relevant to early-stage financing
	Systemic innovation process in crowdfunding networks	Mollick and Robb (2016)	Focuses on how crowdfunding might democratize the commercialization of innovation as well as financing	Conceptual	Presents findings that point to a potentially vast alternative infrastructure for developing, funding and commercializing innovation.
		Di Pietro, Prencipe, and Majchrzak (2018)	Explores the open innovation process in start-ups within the context of crowdfunding	Qualitative: case studies	Provides insight into the under-investigated open innovation process of start-ups and suggests that collaborating with investor networks during the crowdfunding process leads to success
	Business model innovation in open crowdfunding networks	Lehner, Grabmann, and Ennsgraber (2015)	Explores the entrepreneurial implications of crowdfunding as alternative funding source for innovations	Qualitative: case studies	Suggests that crowdfunding needs to be addressed as a bundle of processes leading to innovative entrepreneurial business models
		Gamble, Brennan, and McAdam (2017)	Explores how crowdfunding is affecting music-industry business models	Qualitative: interviews	Examines the process by which crowdfunding is shaping the business modelling of key stakeholders within the music industry
		Quero and Ventura	Applies the understanding of value propositions from service-dominant logic to crowdfunding	Qualitative: case studies	Provides an integrated framework of the crowdfunding phenomenon as a business model wherein actors co-create value by developing one actor's value proposition

2.2 Critical capabilities for network formation and network management

To develop our theoretical framework, we reviewed literature on dynamic (Eisenhardt & Martin, 2000; Teece, 2007; Teece et al., 1997), entrepreneurial (Alvarez, 2001; Maguire et al., 2004), network (Möller & Halinen, 2017; Nordin et al., 2017; Perks et al., 2017), marketing (Day, 2011; Morgan, 2012), and commercialization capabilities (Aarikka-Stenroos et al., 2014; O'Connor & DeMartino, 2006; Story et al., 2011).

All five capability literatures draw on the resource-based view of the firm (Barney, 1991; Wernerfelt, 1984), define capabilities as an organisation's capacity to deploy resources, and expect capabilities to be visible as more or less routinized actions. However, these five literature streams implicitly or explicitly address different maturity levels of organizations and markets. Dynamic and marketing capabilities, for example, implicitly view markets as given and organizations as already formed; whereas entrepreneurial capabilities and commercialization capabilities view markets, networks and organizations as at least partially emergent entities.

In the following we provide an overview of the central activities for network management and network orchestration extracted from the five literature streams. We organize these activities into the three capability sets that emerged as critical phases for network formation and network management from our literature review, namely, 'visioning and sensemaking', 'business modelling' and 'network development'.

2.2.1 Visioning and sensemaking

All five reviewed literature streams place considerable emphasis on the ability of a focal actor (e.g., entrepreneur or firm) to *vision or sense* what is taking place in their operating environment and to *make sense of it*. Entrepreneurial capabilities highlight the importance of opportunity identification (Arthurs & Busenitz, 2006) and ability to select which ideas to pursue in the context of the firm's priorities and resource constraints (Abdelgawad, Zahra, Svejenova, & Sapienza, 2013). Dynamic capabilities literature echoes the same sentiment by pointing out the

importance of sensing opportunities (Teece, 2007). Marketing capabilities provides a slightly more nuanced picture through the concept of market-learning capabilities that relate to awareness and curiosity for the external environment, active experimentation to generate insights, and preparedness to act on partial information (Day, 2011; Morgan, 2012). Commercialization capabilities literature takes the creation of a new technology as a starting point and highlights the importance not only of exploration capabilities (Rubera, Chandrasekaran, & Ordanini, 2016; Yalcinkaya, Calatone, & Griffith, 2007) and discovery and invention capabilities (Datta, Mukherjee, & Jessup, 2015; O'Connor & DeMartino, 2006) but also of market knowledge and information management (Aarikka-Stenroos et al., 2014; Rubera et al., 2016) and identification of user benefits (Aarikka-Stenroos & Lehtimäki, 2014). Drawing on work by Weick (1995), the network literature acknowledges various forms of sensing, under labels such as network insight (Mouzas & Naudé, 2007), sensemaking, and conceptualizing (Möller & Halinen, 2017).

Whereas sensemaking is more about the focal actor making sense of what is happening, network management literature emphasises the importance of being able to manifest the vision (envisioning) in terms of *setting an agenda for the network* (Möller & Halinen, 2017; Nordin et al., 2017; Perks et al., 2017), including framing (Bessant, Öberg, & Trifilova, 2014), sense-giving (Henneberg, Naudé, & Mouzas, 2010), agenda development (Järvensivu & Möller, 2009; Möller, 2010), evangelizing (Nordin et al., 2017) and introducing new business propositions (Mouzas & Naudé, 2007). Commercialization literature emphasizes the importance of positive outcomes in agenda-setting, including *ability to articulate opportunities* (O'Connor & DeMartino, 2006; Story et al., 2011) and to communicate benefits to stakeholders (Aarikka-Stenroos & Lehtimäki, 2014). The entrepreneurship literature similarly acknowledges the importance of developing arguments that appeal to various actors (Maguire et al., 2004). The dynamic capabilities literature, however, mentions crafting a vision for the network only

fleetingly when it acknowledges that influencing the surrounding ecosystem likely requires capabilities that increase customer value creation (Wilden, Devinney, & Dowling, 2016).

2.2.2 Business modelling

According to Teece (2007), to operate successfully in the market, actors need to be able to delineate an appropriate business model and to define enterprise boundaries (i.e., which activities are conducted by the focal firm, which by its partners). The dynamic capabilities literature calls this ability, *seizing*. The same sentiment is echoed in the marketing capabilities literature that highlights the importance of *architectural marketing capabilities* and *resource reconfiguration capabilities* (Morgan, 2012). Although network literature pays less attention to seizing, it acknowledges the need to determine focal actors' goals and core activities (e.g., Partanen & Möller, 2012). These goals, however, are likely to change due to the dynamic developments of networks. Consequently, continuous and dynamic *alignment and re-alignment* processes need to be in place.

Network literature shares this view with dynamic capabilities literature. It acknowledges the need to align and re-align activities on the network level, address network maintenance, renewal and updating (Möller & Halinen, 2017), seek advice on adjusting the network, verify needed adjustments with network members, and improve resources and routines linked to value creation (Perks et al., 2017). The marketing capabilities literature also emphasizes the importance of aligning the organization to the market (Day, 2011).

The commercialization capabilities literature highlights the *process that extends from developing business proposals to production or service delivery* (Datta et al., 2015; O'Connor & DeMartino, 2006; Story et al., 2011). It therefore focuses on securing funding (Story et al., 2011), launching the new offering, managing customer leads and references (Aarikka-Stenroos & Lehtimäki, 2014; O'Connor & DeMartino, 2006; Rubera et al., 2016; Story, Hart, & O'Malley, 2009) and ramping up the business by investing in repeatable processes and business

infrastructure (O'Connor & DeMartino, 2006). Sandberg and Aarikka-Stenroos (2014) argue that incubation capabilities, such as applying a new business model that might damage firms' existing business and undermine their existing business model (Dewald & Bowen, 2010), are required to successfully commercialize a new product or service.

Interestingly, the commercialization, marketing, network and entrepreneurial capability literatures agree that developing a novel business model is rarely a product of a linear analytical process. When faced with conditions of true uncertainty, entrepreneurial firms tend to approach business model development through probing, adaptation, experimentation, beta testing and prototyping (Abdelgawad et al., 2013; Alvarez & Barney, 2007; Day, 2011; Moorman & Day, 2016; Morgan, 2012; O'Connor & DeMartino, 2006; Story et al., 2009).

2.2.3 Network development

Business modelling relies on the activities of the focal actor and other actors in the network. Marketing capabilities literature acknowledges the importance of open marketing capabilities, defined as the *ability to access the resources of partners* (Day, 2011), but it does not explain how this can be done. Network management and commercialization literature, however, depict a process that includes *identifying and assessing possible partners and their resources* (Järvensivu & Möller, 2009; Partanen & Möller, 2012; Aarikka-Stenroos & Lehtimaeki, 2014). This process centres on selecting the most appropriate partners (Möller & Halinen, 2017), negotiating roles to ensure appropriate task distribution and goal alignment (Aarikka-Stenroos & Sandberg, 2012; Partanen & Möller, 2012; Perks & Moxey, 2011; Planko, Chappin, Cramer, & Hekkert, 2017) by, for example, providing clarity of resource trade-offs, building awareness and credibility, and educating the market (Aarikka-Stenroos et al., 2014; Aarikka-Stenroos & Sandberg, 2012; Järvensivu & Möller, 2009; Möller & Halinen, 2017).

Building a network also includes *creating governance*. In addition to negotiating the right roles for each actor in the network, effective network management establishes structures and

norms held in common by all network participants. The network literature suggests that the appropriate governance system is highly contextual, with more stable and hierarchical networks, for example, likely to require a different governance system from the systems evident in emerging and loose networks (Möller & Halinen, 2017). Network governance typically covers governance mode and leadership structure, rules for collaboration, knowledge sharing and value appropriation, and decision-making mechanisms (Dagnino et al., 2016; Partanen & Möller, 2012; Planko et al., 2017). The dynamic capabilities literature talks extensively about governance, such as aligning incentives, minimizing agency and blocking rent dissipation, but it investigates these activities within the context of the firm and its employees rather than the context of the wider network (Teece, 2007). The commercialization literature, however, emphasizes that the processes of accessing, mobilising and organizing relational resources in a network require softer governance mechanisms such as trust and reciprocity between actors (Aarikka-Stenroos & Sandberg, 2012).

2.2.4 Expectations for network formation and network management in crowdfunding networks
Our literature review on crowdfunding networks and the insights we gained from the five capability literature streams raised three expectations not covered in the existing capabilities literature. First, because context influences the exact manifestations of network capabilities (Möller & Halinen, 2017), we can assume that ephemeral and emerging networks capabilities will be more influencing or orchestrating in nature, in contrast to more traditional and stable networks, where management of the network tends to be direct. Also, because crowdfunding networks are typically ephemeral and decentralized, we can expect network *capabilities to be 'softer', aiming to influence or orchestrate.*

Second, because capabilities in crowdfunding networks are likely to differ with regards to agency, we can expect the agency of the actors will determine their potential contribution in the network and their role in network management and network orchestration. According to

Möller and Halinen (2017), existing network literature awards managerial agency to one organization and examines how this focal organization carries out network management activities. However, in open crowdfunding networks, we might see variation in terms of the degree to which the focal organization is able to control capability deployment and related outcomes. It appears that 'visioning and sensemaking' allow for more traditional, managerial agency because the focal actor develops network insights and the agenda for the network relatively independently. That said, 'business modelling' and 'network development' are likely to involve *more collective agency*, wherein the open, emerging network of actors shares governance and undergoes continuous alignment and re-alignment without any one actor being able to effect the outcomes alone or to remain independent from the engagement of other actors.

Our third expectation concerns the significant and active role the social network plays in crowdfunding success and shaping a ready market. As such, we can expect the critical capabilities in crowdfunding networks to relate to the *social capacity of an organization*.

3. Methodology

The abductive reasoning approach (Tavory & Timmermans, 2014) that informed our research process is a nonlinear, non-sequential, iterative process of systematic and constant movement between literature and empirical data, through which literature-based results can be reconceptualised or expanded as indicated by the empirical findings (Dubois & Gadde, 2002; Nenonen et al., 2017). Abduction is a suitable means by which to lay a foundation for further inquiry because it begins with 'unmet' expectations and then infers plausible explanations (Nenonen et al., 2017; van Maanen, Sørensen, & Mitchell, 2007).

Our decision to use abductive reasoning rested on the mismatch between the existing literature and our experience with crowdfunding networks. Most of the literature focused on network, dynamic, entrepreneurial, marketing and commercialization capabilities suggests that network-related capabilities are normal organizational capabilities in that sense that they aim to

manage the network and are deployable by the focal firm and its managers. The outcomes of those capabilities, moreover, are largely under managers' control. However, the nascent empirical evidence regarding crowdfunding networks suggested to us a largely different empirical context and the presence of a different kind of capability that is crucial for operating and collaborating in crowdfunding networks. By tacking back and forth between the extant literature and the empirical data extracted from the crowdfunding blogs, we endeavoured to refine our understanding of capabilities for network formation and management in the context of crowdfunding networks.

3.1. Data selection

Blogs on crowdfunding are numerous and provide a rich source of data. We found over 3,500 blogs, posted on a variety of blog websites, written by crowdfunding experts. Our overall target was to identify blogs featuring content on *crowdfunding success and success factors* in order to extract indicators for *critical capabilities for operating effectively* in crowdfunding networks.

In line with accepted selection procedures in netnography (Kozinets, 2002; Kozinets, 1999), we followed a sophisticated process to determine the text material for this research. Netnography is a qualitative research method to unobtrusively study the nature of online discourse. In our study, it was applied to understand which themes are of significant interest in the discourse of crowdfunding blogs. Thereby, the discourse, rather than the bloggers themselves are subject to this research. Since netnography is conducted without direct researcher participation, it can be used to unobtrusively analyse the discourse, free from the bias which may arise through the researcher's involvement (Jawecki & Fuller, 2008).

Netnography gives a detailed description as to how to identify if information publicly available on the internet is trustworthy. Based on this description, we whittled our selection down to 11 blog websites (see Table 2). Our initial screening of the blog material had allowed us to develop a keyword list, which we applied to the 11 websites. These keywords (including

for example: success, tips, news, best practice, lessons learned, advice, outlook) helped us identify blogs *relevant for crowdfunding success*. Further, we selected for blogs: *published in English, published in 2013 or 2016, original content (with duplicates excluded), quality writing (accuracy, adequate language).* We decided to focus on 2013 and 2016 because 2013 was the first peak of crowdfunding debates in the blogosphere, while 2016 left a sufficiently large gap of time to limit duplicates in the data set.

In a second step, our extensive manual screening with respect to content quality centred on the professionalism of the writing, the number of blog entries of a focal author and, if accessible, the author's profile (Kozinets, 2002). The data set that we extracted as a result contained 1,484 comments from 527 crowdfunding blogs, a number that represented 14.5 percent of the 3,500 blogs we initially identified.

Table 2. Blog website selection

Blog website	Blogs 2013	Blogs 2016
http://www.crowdfundbuzz.com/crowdfunding_blog/	10	29
http://www.nesta.org.uk/project/crowdfunding	10	19
https://www.youcaring.com/blog	23	141
https://www.kickstarter.com/blog	25	89
https://crowdfunduk.org	26	4
https://www.seedinvest.com	35	14
http://blog.crowdcube.com	36	151
http://crowdsourcingweek.com	143	147
http://www.crowdfunder.co.uk	180	133
http://www.huffingtonpost.com	199	197
https://go.indiegogo.com/blog	201	166
Total	**888**	**1090**

3.2. Research process and data analysis

Our thematic content analysis (Mayring, 2015) analysis consisted of four stages. During the first, we identified themes within the data set that would provide us with both an overview

of the discourse in the crowdfunding blogosphere and an initial sense of the phases of the crowdfunding process. An inductive open coding process executed in MAXQDA 12 qualitative software led us to identify18 themes ranging from the motivations of the founder to use crowdfunding and the choice of crowdfunding platform through to pitch design and social media interactions. We also identified four phases within the crowdfunding process: preparation and pre-funding, early bird funding, regular funding and creating ready market.

The second stage of the research process involved a systematic literature review and references back to the first stage of our work. The inductive open coding of the first phase identified various activities that founders conduct during the four phases of the crowdfunding process. Mindful that capabilities are best detected as actions (Morgan, 2012; Winter, 2000), we used these identified activities to guide our literature review of network, dynamic, entrepreneurial, marketing, and commercialization capabilities and thereby allow us to determine their relevance for operating in crowdfunding networks. This step persuaded us to reassemble the capabilities into three capability sets, as reported in the second section of this paper, namely, visioning and sensemaking, business modelling, and network development.

The third stage entailed a deductive analysis of the empirical data based on the results from our Stage 2 literature review (Mayring, 2015) and a reflection on the empirical material (Alvesson & Sköldberg, 2005) in light of the three capability sets. Our goal here was to explore if and how the three capability sets manifest in the crowdfunding context. In practice, we again coded the blog data, using codes derived from the literature review, such as 'identifying potential partners', 'crafting a vision', 'evangelizing within the inner network' and 'assessing potential partners'.

Our aim during the fourth stage was to detect possible sub-sets of the previously identified three capability sets. To do this, we revisited the blog data one more time and scrutinized it using open, axial and selective coding (Strauss & Corbin, 1997, 1998). As a result, we indeed

identified new capabilities relating to fostering active engagement among platform members and building intangible assets for the community. These capabilities are, to the best of our knowledge, not present in the existing capability literature. We completed this stage by comparing and discussing each of our identified capability sets (along with their underlying activities and the ability of the founder to control capability deployment and the resulting outcomes) against the understandings we'd drawn from the existing crowdfunding literature. That process led to us reforming our previous sets into four new capability sets that we think have critical relevance for successfully operating and collaborating in crowdfunding ecosystems. These four capability sets, which will be presented in detail in the next section, are visioning, dynamic business modelling, engaging, and attaining social continuity.

4. Findings: Collaborative Capabilities in Crowdfunding Networks

In this section of our paper, we frame our four proposed capability sets as *collaborative capabilities* because the central element that connects all four refers to *collaborating with the crowd*. To bring more transparency to our findings, we present a data structure for each identified capability set by highlighting, in table form, the underlying activities along with illustrative quotes from our data set.

4.1 Visioning: Laying the foundations for an emerging network

This first capability set (Table 3) contains four underlying activities that *set the stage for the emerging crowdfunding network:* (i) crafting a vision narrative, (ii) road-mapping a preliminary plan, (iii) evangelizing in the inner circle, and (iv) assessing alternative platforms and partners.

Table 3. Visioning capability: underlying activities, outcomes and illustrative quotes

Underlying activities	Illustrative quotes
Crafting a vision narrative *Developing a compelling vision and story of your emerging business and yourself*	'Think about what inspired your project, the motivations behind it and how it is going to change the "status quo" or fill a need in the market. What was the source of your creativity and what made you decide to turn to crowdfunding to make it come to life?' (ID 989) 'Don't forget that your team's story is equally, if not more, important than the campaign itself. Sharing what makes your project stand out will help a reporter build a story around it that will compel readers to get involved, which is exactly what you want.' (ID 28)
Roadmapping a preliminary plan *Defining tentative goals, milestones, methods of tracking and timing to bring the vision to life*	'Know your goal. Set benchmarks along the timeline of your project and aim to meet those goals. Divide your target by the number of weeks your project will run. If it's a commercial venture, you should aim to raise 25% of your funding within 24 hours. If it's a private or community venture, you should aim to raise 50% of your funding within the first week.' (ID 257) 'Overall, we find that building momentum early can help set up a campaign for long-term success. Campaigns that raise 30% to 50% or more of their goal in the first 48 hours raise 47% more money on average.' (ID 122)
Evangelizing in the inner circle *Using close contacts as sounding board for the vision narrative*	'Start day one of the campaign by reaching out to your friends, your family, and possibly your social media following.' (ID 916) 'For me, the most important thing was to start strong. So, the morning my campaign launched, I chased down and followed up extensively with family members and close friends to get their donations in. As a result, it became much easier for strangers to donate to the project, especially when they see that one has hit 100 percent in days.' (ID 1050)
Assessing alternative platforms and partners *Identifying a platform and collaborators that are aligned with your vision and values*	'Researching the top bloggers and social networkers that relate to your cause is vital to your campaign. These people and networkers can help spread the word about your campaign as they are the most likely to share it through an interview, article, or a social post.' (ID 316) 'We used Indiegogo because it felt like it was the best fit for us. From square one the IGG crew was uber supportive of our idea. And we wound up partnering with Startup America Partnership to gain some additional support and exposure. So it just made sense.' (ID 221) 'Open campaigns up to other groups [i.e., crowdfunding initiatives] who may have an overlapping mission. This type of two-way collaboration will strengthen the relationships among groups [i.e., crowdfunding initiatives], perhaps leading to greater cross membership and joint event opportunities.' (ID 1373)
Value creation: Articulating initial value proposition	'Is your organization at a place where it is ready to grow? Do you have a story that people can relate to? Is everyone on your team on board and ready to pull their weight?' (ID 490) 'Have your shit ready, and your crowd ready, and your fans ready, and Kickstarter is the tool to ask them to help you" (ID 164)

The first activity, *crafting a vision narrative*, is similar to the 'visioning' that Nordin et al. (2017) identified. It also resembles the 'sensing and sensemaking' (Möller & Halinen, 2017)

and 'agenda-setting' (Henneberg et al., 2010; Järvensivu & Möller, 2009) capabilities in the existing literature because the resulting vision is deliberately crafted to resonate with other actors in the network. One powerful way of gaining this resonance in a crowdfunding context is to emphasize not just the tangible business opportunity but also the personality and the personal story of the founder. The importance of relaying personal information has been highlighted in recent entrepreneurship research (e.g., Burns, Barney, Angus, and Herrick, 2016).

Activity 2, *roadmapping a preliminary plan*, is almost identical to 'roadmapping' identified by Nordin et al. (2017). Although this activity also relates to 'sensing and sensemaking' (Möller & Halinen, 2017), it gives a more nuanced view of planning, goals and metrics and thus has similarities to the strategic marketing planning capabilities that Morgan (2012) identified. Roadmapping places a strong emphasis on early funding success, and thus relates to the important role of signalling during the early funding phase.

The third underlying activity, *evangelizing in the inner circle*, seems to us to link into the 'sensing and sensemaking' (Möller & Halinen, 2017) and 'agenda-setting' (Henneberg et al., 2010; Järvensivu & Möller, 2009) capabilities in the existing literature. It also relates to the ability to articulate opportunities in the commercialization literature (O'Connor & DeMartino, 2006; Story et al., 2011). This third activity enables founders to refine their vision narrative and prepare their close network for 'getting active' as soon as the crowdfunding initiative is launched on the crowdfunding platform. Entrepreneurship research also validates the importance of close network ties during the early stages of entrepreneurial ventures (e.g., Barney, Herrik, Chen, Burns, & Angus, 2017)

The fourth activity, *assessing alternative platforms and partners*, is well described in the network management literature under labels such as 'identifying and assessing possible partners and their resources' (Järvensivu & Möller, 2009; Partanen & Möller, 2012) and 'selecting the

most appropriate partners' (Möller & Halinen, 2017). Coopetition (collaboration between competing firms), a phenomenon that has recently captured considerable attention due to its increasing relevance to business practice (Ritala, Golnam, & Wegmann, 2014), seems to play an important role for partnering in crowdfunding ecosystems.

In summary, the identified visioning capability is well established in the existing capabilities literature. However, our study illuminates two aspects of visioning that are relatively novel within the network management literature and that relate closely to social networks: the importance of a founder's personality and personal story to the vision, and the significant role of close networks of friends and family in the early stages of visioning and agenda-setting.

4.2 Dynamic business modelling: Building adaptive and absorptive capacities

The second set of collaborative capabilities (Table 4) relates to 'dynamic business modelling', understood as building adaptive and absorptive capabilities to further *design and innovate the business model together with the crowd*. We detected four underlying activities during our research: (i) agility-building, (ii) prototyping and experimenting, (iii) advice-seeking, and (iv) legitimizing.

Table 4. Dynamic business modelling capability: underlying activities, outcomes and illustrative quotes

Underlying activities	Illustrative quotes
Agility-building *Building adaptive capability to adjust to changes*	'Prepare in advance. Make something people want to support and run a clean, well-planned campaign and then accept it won't go smoothly.' (ID 1409) 'Adjust your strategy to create more content around your beneficiary's news' (ID 712) 'It's a good idea to see where your traffic is coming from – that way you can adjust your marketing strategies.' (ID 1201)
Prototyping and experimenting *Building adaptive capability to innovate with the crowd*	'Let donors download beta versions, draft cartoons such as ... "We've just hit the halfway mark! To celebrate, here is a (very short video) of playtesting the prototype in the library."' (ID 455) 'Invite people to sense-check for where it doesn't click. Plug the holes before launch.' (ID 738)
Advice-seeking *Building absorptive capacity to access expert knowledge*	'We researched organizations that had similar causes to ours (based in Ghana, focusing on education, etc) and asked for advice and support. We also asked mentors who have held successful crowdfunding campaigns.' (ID 505) 'As entrepreneurs, we don't want to just grow our businesses – we want to grow them exponentially. That's why I love seeking out advice from the top serial entrepreneurs: business owners who have built one successful company after another after another. Their experiences can prove invaluable to those of us seeking to take our companies to the next level, and their hard-won lessons can help create a clear track for all of us to run on.' (ID 15)
Legitimizing *Signalling trustworthiness and building reputation*	'A contributed article or opinion piece written by you is also a good way to position yourself as voices of authority.' (ID 527) 'Through constant engagement with your backers, you will build a public persona as a trusted entrepreneur, and eventually establish your business with the help of your supporters.' (ID 366) 'So how you connect in the real world is very important. If you or your organization is extrovert, well connected, respected or liked in the real world – then that will be reflected in your virtual world. Your messages will be shared because people believe in what you are doing or trust you to help you.' (ID 40)
Value creation: Building a viable business model	'Not only does a contributor receive your product, but they can become part of the creation process. You can use the feedback you receive from the crowd to iterate along the way, and this dynamic relationship connects your contributors to your product in a meaningful way.' (ID 1224) 'Together we're building a new model for creating. One that all of us can participate in, and one that's getting stronger every day.' (ID 868)

The first three of these activities relate to founders' efforts to develop the right product,

service or business model for the crowd. Nordin et al. (2017) capture these activities in their

discussion of 'following an emerging path', 'balancing adaptability with agility' and 'leveraging information flows' within the context of network management in emergent high-tech businesses. The idea of seizing an emerging opportunity through fast and agile business model development is well established in the dynamic capabilities, marketing capabilities, and commercialization capabilities literatures (Day, 2011; Moorman & Day, 2016; Morgan, 2012; O'Connor & DeMartino, 2006; Story et al., 2009; Teece, 2007). Amit and Zott (2016) argue that today's rapidly changing economic landscape requires firms to take a holistic approach to renewing and innovating their business models. They also contend that dynamic capabilities are central to the business model design process. Sandberg and Aarikka-Stenroos's (2014) reference to the 'incubation capabilities' required to innovate a firm's business model is also relevant here.

These considerations reveal that our study found little new in relation to the first three activities, except for the likelihood that within a crowdfunding context, the dynamic business modelling capability requires tremendous speed because testing takes place in real time and in public, open environments as opposed to controlled laboratory environments such as focus groups. The activity of *legitimizing*, however, is relatively new to the capabilities literatures. Although related to nurturing trust among network partners (Partanen & Möller, 2012; Planko et al., 2017), legitimacy is a broader concept than trust.

One of the few studies explicitly addressing legitimizing in a network management context is the investigation of platform development conducted by Perks et al. (2017). Drawing on work by Dagnino et al. (2016) in particular, they described how an emerging platform can be legitimized through metrics that portray value creation and demonstrate the platform's value to actors beyond the immediate network. However, within the context of our study, legitimizing is more about legitimizing the founders and their projects than it is about legitimizing the platform (Frydrych, Bock, Kinder, & Koeck, 2014). Maguire et al. (2004) describe building

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legitimacy and accessing resources among diverse groups of actors as central entrepreneurial capabilities, an account that aligns with what we found during our research. By constantly engaging with the crowd, founders become accepted and can establish themselves as authorities in the network, an approach that, in turn, lays the foundation for the support or engagement of the crowd.

4.3 Engaging: Actively relinquishing control to establish collective agency

This third set of capabilities positions 'engaging' as a central new capability set. By engaging informal ties, the crowdfunding initiative can *reach its tipping point*, the moment when it pulls away from its existing system (Dubé, Hitsch, & Chintagunta, 2010; Katz & Shapiro, 1985), that is, the network extends beyond the crowdfunding platform and shapes a ready market. Engaging reflects a set of three underlying activities: (i) attracting informal ties, (ii) activating bridging ties, and (iii) empowering and entrusting (see also Table 5). The engaging capability thus becomes a central means of expanding the network from an initial inner circle of actors (family and friends) to a broad network of loosely coupled informal ties.

Table 5. Engaging capability: underlying activities, outcome and illustrative quotes

Underlying activities	Illustrative quotes
Attracting informal ties *Building up critical mass*	'Crowdfunding campaigns always fail when they don't gain sufficient public awareness. And raising public awareness for your project is only possible through proper, professional promotion.' (153) 'Hosting offline fundraising events is another great way to rally support and donations for your cause. During events, contributions can easily be made to your online campaign via donation stations that can be set up with a laptop showing your fundraising page.' (ID 393)
Activating bridging ties *Enabling the crowd to share your story with their network*	'By the time contributions from your inner circle start to come in, it will be time to reach out to news outlets, bloggers, and beyond to acquire some coverage and bring fresh eyes to your campaign.' (ID 917) 'Ask your friends and other network contacts to share your updates and fundraiser link on their channels, too, so you will reach their followers and find even more potential donors.' (ID 1110) 'Make it easy for supporters to share your story too: provide links, pictures, and a summary of your efforts for them to copy or link. The easier it is to share, the more people will do it.' (ID 297)
Empowering and entrusting *Giving the crowd ownership and responsibility*	'Involve your prospective backers in your decision-making process. For example, you can ask for their suggestion regarding your perks. If your project is about a product or service, you can request them to ask for some additional features that they may want. Be sure to provide frequent project updates to your crowdfunding campaign backers and ask them to share your project with their social media connections. This will directly involve them in your project and make them feel (quite rightly) they are a part of your crowdfunding campaign promotion team. Do whatever you can to make sure that all your prospective backers get attached to your project both financially and emotionally.' (ID 897) 'Muna says, "to get people to do this, encourage them to take ownership of the campaign." He continues, "the simplest way to do this, is to get them to give you feedback on every piece of your campaign such as your exact wording, the name of the rewards, or on your video content."' (ID 1046)
Value creation: Reaching the tipping point for market entry	'Here are numerous stories of campaigners (like Satarii Star and Gravity Light) who were approached by venture capitalists after the success of their campaign. They were able to demonstrate that there was a true market for their product, and that people were willing to make a monetary transaction before the good was made.' (ID 1227) 'The attention Ockel Sirius generated through crowdfunding put them on Microsoft's radar … they said "Like, okay, who are those guys?" And then, they looked at our campaign page, and then we started talking, and now they are officially supporting us for the Ockel Sirius.' (ID 579)

The first underlying activity, *attracting informal ties*, is important with respect to quick attainment of a critical mass. We could find no mention in the network management literature of the utility of attracting large numbers of potential investors or network partners. According to Moorman and Day (2016), only a handful studies have examined how firms deploy

marketing capabilities in order to increase their attractiveness as a potential investment or as a potential partner. Our study shows, however, in keeping with literature on social media and digital marketing (e.g., Kannan & Li, 2017), that gaining public awareness (e.g., through social media presence and digital marketing activities) is vital if the crowdfunding initiative is to reach a critical mass of informal ties.

The second underlying activity, *activating bridging ties*, relates to reaching new informal ties by activating existing supporters (Dagnino et al., 2016). Making sharing as easy as possible by providing relevant content and using standardized infrastructure (e.g., hyperlinks or hashtags) is an essential means of activating bridging ties. Because activation of new informal ties brings fresh ideas to the project (Perks et al., 2017), this activity is important for maintaining a high degree of innovativeness in the crowdfunding ecosystem. Further, in alliance with the previously discussed activity 'attracting', activating bridging ties leverages positive network effects and enables growth within the crowdfunding ecosystem and beyond (Katz & Shapiro, 1994). Attracting and activating informal ties is thus central for confirming that a market for the crowdfunding initiative exists.

Our third activity, *empowering and entrusting*, references the process whereby the founder gives ownership and responsibility to the crowd. We consider this process one of the most interesting findings of our study. By educating, integrating and constantly interacting with the crowd, founders empower the people making up the informal ties to take on extra roles and engage in various behaviours, such as making decisions, representing the project and giving feedback. In short, the crowd builds up managerial agency.

As Dagnino et al. (2016) emphasize, combining informal and formal ties creates value in the network and it can also lead to the informal ties transforming, during the later phases of the network formation, into the formal ties that can leverage co-generation of new specific knowledge. The commercialization literature also points to the fostering of 'soft' governance

mechanisms such as trust and reciprocity between network actors (Aarikka-Stenroos & Sandberg, 2012). However, as we discovered while conducting our research, informal ties can gain agency in platform-based fields without being formalized. In other words, actors who have no formal commitment to the founder or the project (e.g., employment contract, collaboration agreement) can still become active decision-makers and representatives of the project.

Empowering and entrusting thus goes beyond what is known in the network management literature as mobilizing, influencing or orchestrating actors (Perks et al., 2017; van Bockhaven & Matthyssens, 2017). This is because the founder relinquishes control and managerial agency in order to let the crowd build up ownership and collective agency for the crowdfunding initiative. This finding broadens the established concept of capabilities from one focused on executing managerial agency to one focused on operating with collective agency. Managerial agency in platform-based fields thus involves not only a central actor or consortium of actors but also a collective of numerous actors connected by a digital platform.

4.4 Attaining social continuity: Building intangible assets for continuity

'Attaining social continuity' brings another new capability set to the table because it, too, is not evident in the existing capabilities literature. Attaining social continuity is a capability that leads to positive outcomes for founders, funders and for the crowdfunding platform. It relates to the idea of building up intangible assets such as social capital or open-access knowledge (Butticè, Colombo, & Wright, 2017). However, these intangible assets are not necessarily possessed by one founder or one crowdfunding initiative (Rodrigo-Alarcón, García-Villaverde, Ruiz-Ortega, & Parra-Requena, 2018) but instead tend to be a common good of the broader crowdfunding network. We identified three activities underlying this new capability set (see also Table 6): (i) acknowledging and rewarding, (ii) giving back, and (ii) generating open knowledge.

Table 6. Attaining social continuity capability: underlying activities, outcomes and illustrative quotes

Underlying activities	Illustrative quotes
Acknowledging and rewarding *Showing appreciation for the crowd's work*	'Say "Thank You": Once your community has backed your campaign, don't stop there. Be sure to thank them for sticking with you through the process! Showing appreciation is a great step towards turning backers into advocates for your campaign.' (ID 129) 'In return for getting involved in your business or project, it is important to offer people a reward of some kind. This doesn't have to be something expensive, in fact you can probably come up with something free. Try to have a reward for every size donation, so that each person feels adequately appreciated for what they give.' (ID 325) 'And at the end we threw another closing party to make sure nobody missed out of the fun.' (ID 665)
Giving back *Acting in a reciprocal manner towards the crowd*	'One unique way to say thank you to donors is to reciprocate. When your donor community has a cause they are fundraising for, then offer your help. Even if you can't donate to their cause, you can still offer to volunteer, to help with their campaign, and to share their fundraiser with your social network.' (ID 606) 'The work however doesn't stop when the campaign ends. It's important to return the favour, which you can take as an opportunity to connect and network with those who have sponsored you, and make sure to back them up if and when they need it too.' (ID 1024)
Generating open knowledge *Building open knowledge for the crowd and beyond*	'We have some people on the Indiegogo campaign page who actually have more knowledge of technology than we do – and that's really cool.' (ID 575) 'Indiegogo was a great way to connect with the innovators, and we can really learn from them. The feedback you get – the technical knowledge that [the backers] have, the ideas they have about how to improve the device … I think it would be impossible to have this community on a platform that isn't Indiegogo.' (ID 576)
Value creation: Building open-access social capital on a network level	'Everybody wrote about us. Everybody wanted a piece of the cake. All before we had faced reality.' (ID 1143) 'The real reward is seeing how someone uses our equipment to create something really cool and shares it with the world.' (ID 1274)

Acknowledging and rewarding, the first activity, relates to showing appreciation for the effort the crowd has invested in a project. It points towards the importance of giving a reward that adequately acknowledges every resource investment of every actor. This activity also creates a form of governance mechanism in the crowdfunding ecosystem (Dagnino et al., 2016; Partanen & Möller, 2012; Planko et al., 2017) and can be seen as a key means of driving

collaboration within the crowd, an outcome that further fosters a sense of belonging to the community (Colombo et al., 2015; Frydrych et al., 2014).

The second underlying activity, *giving back*, emphasizes the important task of creating reciprocity in the system. Collaborative capabilities extend network-building capabilities, such as harvesting and upgrading (Nordin et al., 2017), by adding a social dimension. Reciprocity in a network means founders give back the favour received from the crowd. It also taps into the notion of successful founders acting as role models for new founders and supporting new crowdfunding initiatives.

The third underlying activity, *generating open knowledge*, ensures that although some of the knowledge stays with the crowd, other founders (even potential ones beyond the crowdfunding network) can access it. Social capital is accordingly generated not only through the crowdfunding initiative or within the crowdfunding network but also on a socioeconomic level. Established management literature shows that social capital in networks results from knowledge-based capabilities and knowledge acquisition among actors in the network (e.g., Houghton, Smith, & Hood, 2009; Rowley, Behrens, & Krackhardt, 2000). This stream of literature assumes that the created knowledge stays with a focal actor and thereby creates a strategic benefit for this actor to compete within the system (Rodrigo-Alarcón et al., 2018). Our research however indicates that the creation of open knowledge in crowdfunding networks is not exclusively for the economic benefit of one focal actor but for the betterment of the network and the socioeconomic system as a whole. This interesting insight takes our current understanding of capabilities as sets of activities that predict success for a focal actors and broadens it to include sets of activities that create value in the network and the socioeconomic system as a whole.
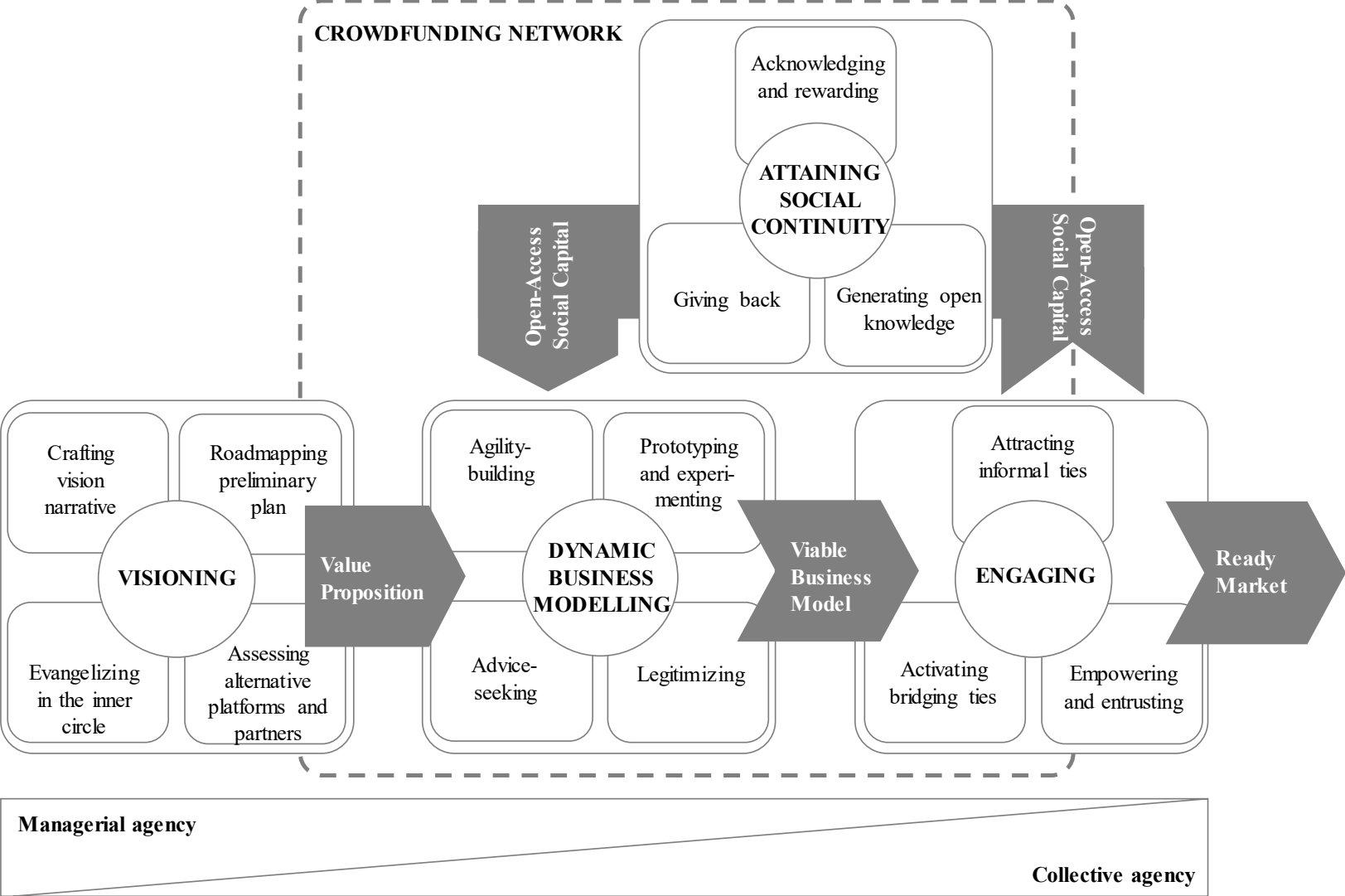
5. Discussion and Conclusions

5.1 Theoretical contribution

Despite an increasing academic interest in the business models underpinning the collaborative economy in general (Amit & Zott, 2016; Benoit, Baker, Bolton, Gruber, & Kandampully, 2017) and the dynamics of the development of crowdfunding networks in particular (Mollick, 2014; Yang, Wang, & Wang, 2016), empirical research in this area is still in its infancy. Responding to the call for more theory building regarding the dynamic process of crowdfunding (Mollick, 2014), we first delineated the characteristics of crowdfunding networks based on an extensive literature review. Crowdfunding networks consist of a complex mixture of business and social actors (Brown et al., 2018), driven by a variety of business, social and personal motives (Chan & Parhankangas, 2017). To understand the degree to which this blend of social and business network structures can be managed and orchestrated, we reviewed and thematically analysed five streams of capabilities literatures focused on emerging network structures: dynamic, entrepreneurial, network, marketing, and commercialization capabilities.

The contributions arising out of this work are threefold. First, crowdfunding as a phenomenon got – with few notable exceptions (Brown et al., 2018; Hu et al., 2015; Lacan & Desmet, 2017; Quero & Ventura, 2018) – very limited attention in the marketing and service research literature. Our literature review structures extant crowdfunding research by identifying two streams that have emerged in this developing research domain and shows how findings form a cross-sectional perspective of crowdfunding networks and a dynamic perspective of crowdfunding network formation contribute to understanding the complexity of crowdfunding network structures. Our research also demonstrates that crowdfunding networks differ from the network structures studied within the context of business networks and strategic nets (e.g., Möller, Rajala, & Svahn, 2005). Because crowdfunding networks are ephemeral and decentralised no one focal firm or entrepreneur can fully manage them. As such, the role and development of social network relationships are central for crowdfunding success.

The second significant contribution of this research relates to the delineation of a portfolio of collaborative capabilities, as depicted in Figure 1. Our findings suggest that four interrelated collaborative capabilities are critical to operating successfully in crowdfunding networks: visioning, dynamic business modelling, engaging, and attaining social continuity. While visioning and dynamic business modelling have been broadly discussed in the existing network, (e.g. Nordin et al., 2017), marketing (e.g. Day, 2011; Moorman & Day, 2016), commercialization (Aarikka-Stenroos et al., 2014; O'Connor & DeMartino, 2006; Story et al., 2011) and entrepreneurial capabilities literatures (e.g. Maguire et al., 2004), our study reveals new nuances with respect to the important role of the personal story of the founder and the tremendous speed of dynamic business modelling, which takes place in real time and in public and follows the rules of 'failing fast'.

Figure 1. Collaborative capabilities in crowdfunding networks

CROWDFUNDING NETWORK

ATTAINING SOCIAL CONTINUITY
- Acknowledging and rewarding
- Giving back
- Generating open knowledge

Open-Access Social Capital

VISIONING
- Crafting vision narrative
- Roadmapping preliminary plan
- Evangelizing in the inner circle
- Assessing alternative platforms and partners

Value Proposition

DYNAMIC BUSINESS MODELLING
- Agility-building
- Prototyping and experimenting
- Advice-seeking
- Legitimizing

Viable Business Model

ENGAGING
- Attracting informal ties
- Activating bridging ties
- Empowering and entrusting

Ready Market

Managerial agency

Collective agency

Of the four identified sets of capabilities, engaging and attaining social continuity are newer to the capabilities literatures. Attaining social continuity brings a novel social dimension to the discussion of network capabilities because it builds up intangible assets such as social capital and open-access knowledge (Butticè et al., 2017). These intangible assets are not necessarily possessed by one actor, one crowdfunding initiative or one social unit (Rodrigo-Alarcón et al., 2018) but are often freely available to everyone and are created for a common good. Open knowledge, open codes and open access to resources are central characteristics of the collaborative economy (Botsman & Rogers, 2010), but they have received little attention in both the capabilities and the network management literature. Existing network literature implies that the outcomes of capability deployment benefit the focal actor. Our findings, however, broaden the scope of capability deployment outcomes to include the network as a beneficiary of capability deployment. More generally, this study contributes to the capabilities literature by making the link between capability deployment and its outcomes, which may occur on different analytical levels, explicitly visible.

While customer engagement (e.g., Brodie, Hollebeek, Juric, & Ilic, 2011; van Doorn et al., 2010) and, more recently, actor engagement (Alexander, Jaakkola, & Hollebeek, 2018; Brodie, Fehrer, Jaakkola & Conduit, 2019; Storbacka, Brodie, Böhmann, Maglio, & Nenonen, 2016) are discussed extensively in the contemporary marketing literature, the capabilities that facilitate engagement (from the perspective of the business actor) remain poorly understood. Our research indicates that the full potential of crowd engagement can only be reached if founders relinquish control of their respective crowdfunding initiatives and give agency to the crowd.

Further, because the four capability sets contribute to value creation for the founder and for the crowdfunding network, our research broadens the perspective of value creation by taking it from a firm-centric understanding of value creation (as is dominant in the existing capabilities

literatures) to a network-centred or systemic understanding of value creation. The summary of the four collaborative capabilities in Figure 1 clarifies their value-creation processes with respect to two levels, that of the focal founder and that of the network. *Visioning*, which takes place before the founder enters the crowdfunding platform, articulates the first value proposition. *Dynamic business modelling* results in a viable business model co-created with the crowd, while *engaging the crowd* leads to positive network effects that enable the crowdfunding initiative to reach its tipping point (Dubé et al., 2010; Katz & Shapiro, 1985) and from there shape a ready market. *Attaining social continuity* creates open-access social capital for the next crowdfunding initiative.

This consideration leads to the third substantial contribution of this research. In responding to Möller and Halinen's (2017) call for more research related to agency development in networks, we have been able to show that collective agency is pivotal in leveraging the potential of crowdfunding networks. The locus of agency in the existing network management literature, with a few notable exceptions (Matinheikki, Pesonen, Artto, & Peltokorpi, 2017; Ritvala & Salmi, 2010), typically resides with one central hub or a consortium of actors (Möller & Halinen, 2017). As Matinheikki et al. (2017) point out, there is little research on specific forms of collective action and the joint decision-making that facilitates sharing of power.

Informal social mechanisms such as mutual trust and shared values are still under-investigated in the network management literature (Matinheikki et al., 2017). Our study allowed us to build on the current integrated understanding of social and business network structures to cover the complexity of network management in crowdfunding networks (Brown et al., 2018). As a result, it seems to us that the managerial agency of the founder is predominantly present in the early stages of the network formation. Again, if the crowdfunding initiative is to reach its tipping point, the locus of agency must reside with the crowd. Collective agency is an

essential facet of creating value on the network level. Our research again demonstrates that 'engaging' and 'attaining social continuity' capabilities will only reach their full potential through the collective agency of the crowd. Our study thus broadens the theoretical understanding that capabilities need to be deployed through both managerial agency and collective agency.

5.2 Managerial implications

Our study furthermore provides new insights for managers and entrepreneurs operating in the contemporary context of the collaborative economy in general and crowdfunding networks in particular. First, our literature review of the existing crowdfunding literature provides practitioners with a fine-grained map of these networks. In terms of structure, crowdfunding networks are open two.

sided markets that match one founder to many funders. This one-to-many matching mechanism means that founders and their initiatives must 'stand out from the crowd'. Thus, when entering a crowdfunding platform, managers and entrepreneurs need to pay extra attention to ensuring they are visible and that their story is convincing. In addition, the crowd should find the crowdfunding initiatives and ventures easy to understand and potentially emotionally appealing. The open nature of crowdfunding networks also means, however, that managers and entrepreneurs need to pay careful heed as to what they disclose to the crowd because this information is available to the entire crowdfunding network and to potential competitors.

Second, our proposed portfolio of four critical capabilities for operating and collaborating in crowdfunding networks draws attention to two capabilities little discussed in the network management and capabilities literature: *engaging* and *attaining social continuity*. Because these two capabilities encompass social rather than business activities, they do not intuitively relate to a manager's activity set. Our research indicates that building up these two capabilities is a particularly important facet of operating successfully in the crowdfunding

networks and in the collaborative economy in general. Building up engaging capabilities requires mapping and understanding the social network around the venture. It means finding creative ways to reach out to loose, socially distant contacts, such as making the founder's story or message as 'shareable' as possible, and allowing the network to share this story without trying to control how and when the message is being retold.

Attaining social continuity capabilities requires managers and entrepreneurs to become systematic about and visible while building reciprocal – even altruistic – relationships with the crowd. Activities facilitating these requirements include acknowledging and rewarding other people who get involved with the project, helping others in return, and sharing knowledge with other managers and entrepreneurs who are part of the crowdfunding network.

Finally, our research highlights that agency, the capacity of the manager or entrepreneur to control deployment of his/her capabilities and their outcomes, varies depending on the phase of the crowdfunding process and the capabilities being deployed. During the earlier stages of the crowdfunding process, the focus on visioning agency is managerial, meaning the manager or entrepreneur is the person most responsible for making decisions and making things happen. However, when the process moves to dynamic business modelling, agency becomes shared between the manager or entrepreneur and the crowd. This is because prototyping, advice-seeking and legitimizing all require the crowd's active involvement.

Agency moves even further away from a managerial to a collective attribute when the crowd becomes empowered and entrusted to employ extra roles and behaviours, such as making decisions and representing the project in their broader social network. This shift from more traditional managerial agency to shared or even collective agency relies on managers and practitioners becoming adept at practising distributed leadership (Gronn, 2002), that is, enabling others to lead development of the crowdfunding initiative or venture.

5.3 Limitations and suggestions for future research

The portfolio of collaborative capabilities for operating and collaborating in crowdfunding networks that we developed should be regarded as a first step of enquiry in this nascent field of research. Further research needs to build on and validate our findings and frameworks. Our study contributes primarily to understanding not only the dynamic perspective of crowdfunding networks and the respective emerging stream of crowdfunding literature but also the literature on network management and network orchestration (Möller & Halinen, 2017; Nordin et al., 2017). Future research may therefore want to fully reflect the context of the collaborative economy as a model nested in both business and social spheres and draw on a more systemic perspective, such as S-D logic (Vargo & Lusch, 2004, 2016). Also, because this study provides a deeper understanding of capabilities leading to value creation on both founder and network levels, future research based on the theoretical perspective of S-D logic could investigate the role of institutions and institutional work for network formation in crowdfunding networks and in the context of the collaborative economy in general.

The collaborative capabilities of 'engaging' and 'attaining social continuity' we developed during our study are relatively new to both the network literature and to the marketing literature in general, and our work in this regard offers only a preliminary understanding of these capabilities. Further research, conducted from institutional and systemic perspectives, is needed to refine the conceptualisations of 'engagement capabilities' and 'social continuity capabilities' and their respective practices.

One of the most important features of our study has been our development of the concept of collective (or shared) agency. To fully understand how economic and social mechanisms function in the collaborative economy, we need to gain a robust understanding of this concept, especially as research in this area is still at an embryonic stage. Research centred on investigating and empirically validating the effects of collective agency on value creation on

several levels of analysis (micro, meso and macro) is therefore essential. Scholars also need to give greater attention to the 'dark side' of collective agency and distributed governance, with the academic debate centred in particular on platform-based networks and the collaborative economy.

During our study, we also developed a sophisticated method of selecting high-quality blog entries so they can be used as empirical data. Our selection and subsequent thematic analysis revealed rich and unique insights pertinent to the context of our research project. We are therefore confident that greater use can be made of blog data and other publicly available data, such as TED talks, to inform academic research. Such data sources come with various advantages, such as efficient data-gathering processes and lack of interview bias. In encouraging scholars to use this open source of publicly available data, we also encourage them to further refine the related data selection, analysis, and theorising processes.

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