



Crowdfunding and social capital: A systematic review using a dynamic perspective

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ABSTRACT

Several literature reviews on crowdfunding categorise crowdfunding research into different perspectives but provide limited theory development. The social capital literature offers a promising lens for understanding crowdfunding. We provide a comprehensive review of how internal social capital develops through crowdfunding activities and how both external and internal social capital affect crowdfunding campaign dynamics, including early-stage performance, general process, funding performance and post-campaign performance. Most researchers report a positive but dynamic impact of social capital on crowdfunding activities over time. We apply a dynamic view to develop a conceptual model that explains how external and internal social capital affect crowdfunding campaigns. We conclude with proposed directions for future research, including an analysis of the negative aspects and the causal effects of social capital.

1. Introduction

Crowdfunding is a new and growing phenomenon in entrepreneurial finance that allows project owners to request funding from a potentially large pool of investors. Scholars classify it into four models based on the benefits earned from the backers: donation, reward, lending and equity (Belleflamme et al., 2014).¹ The academic attention to crowdfunding has been growing in lockstep with the phenomenon's development, resulting in several literature reviews (Martínez-Climent et al., 2018; Mochkabadi and Volkmann, 2018; Moritz and Block, 2016). These reviews categorise the existing crowdfunding studies into different perspectives. For instance, Moritz and Block (2016) discuss previous crowdfunding research according to three main actors: capital-providers, capital-seekers and intermediaries. A recent literature review extends the scope to include capital market and institutional perspectives (Mochkabadi and Volkmann, 2018). Although these studies systematically review, classify and synthesise previous knowledge, the conceptual development around crowdfunding is still limited. Thus, a novel review on crowdfunding should not only categorise crowdfunding research into different perspectives, but it should also facilitate theory development (Webster and Watson, 2002) and/or lead to a conceptualisation of the topic (Torraco, 2005).

Social capital theory has received increasing attention in crowdfunding research and may facilitate theory development in this field. On the one hand, social capital, which represents the resources originating from social relationships (Payne et al., 2011), fits the nature of crowdfunding in which fundraisers seek financial resource from others. Research has demonstrated that fundraisers can benefit from their social capital in crowdfunding campaigns. On the other hand, social capital theory may overcome the contextual differences among distinct types of crowdfunding, thereby facilitating a robust conceptual framework. While nonfinancial crowdfunding research (donation and reward-based) draws on studies investigating charitable giving and public goods (Gordon Burtch et al., 2013; Kuppuswamy and Bayus, 2018), financial crowdfunding research (lending and equity) tends to develop hypotheses through previous finance research, such as signalling (Ahlers et al., 2015; Bapna, 2019) and information cascades (Vismara, 2018). Social capital not only positively affects people's prosocial behaviours and public good contributions (List and Price, 2009; Wang and Graddy, 2008), but it also influences microloans (Karlan, 2007) and equity financing (Shane and Cable, 2002). Thus, we posit that analysing crowdfunding research through social capital theory could lead to an integrative conceptual model.

Social capital is a broad concept that covers different dimensions and

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¹ Other new types of crowdfunding have emerged with the development of the crowdfunding market (e.g. convertible loans, civic and real-estate crowdfunding). We follow this categorisation in line with previous researchers.

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includes various facets (e.g. social networks, trust, obligation and shared values). As social capital-based crowdfunding research progresses, there is a need to reconcile different research streams and facilitate theoretical development. Earlier crowdfunding research uses a static view to test whether social capital can predict campaign success (Ahlers et al., 2015; Mollick, 2014; Vismara, 2016) or investors' behaviours (Chen et al., 2014), whereas later studies adopt a dynamic view emphasising that the role of social capital may change over time (Colombo et al., 2015; Dai et al., 2018). Crowdfunding activities can also create social capital, which contributes to crowdfunding dynamics (Butticè et al., 2017; Colombo et al., 2015; Skirnevskiy et al., 2017). Thus, analysing previous research using a dynamic view may better explain the mechanisms that cause social capital to evolve in crowdfunding activities and how they affect crowdfunding dynamics. Hence, our review is guided by the following questions:

- (1) Where does fundraisers' social capital originate?
- (2) How can we conceptualise social capital in the crowdfunding context?
- (3) How do different types of social capital affect crowdfunding activities across a campaign's lifecycle?

The remainder of this review is structured as follows. In Section 2, we briefly introduce social capital theory and outline the keywords for different facets of social capital that we obtain from looking at previous research. We also discuss how to use these keywords to collect social capital-relevant crowdfunding research. In Section 3, we summarise how social capital develops through crowdfunding activities and propose a definition of external and internal social capital that covers structural, relational and cognitive dimensions. In Section 4, we adopt a dynamic view to review how external and internal social capital affect crowdfunding campaign performance in the early stage, throughout the general process, in the midst of funding success and in the post-campaign period. In Section 5, we synthesise the results in a conceptual model. In Section 6, we draw conclusions and suggest future directions for research on how social capital affects crowdfunding dynamics.

2. Social capital theory and literature collection

2.1. Social capital theory

To collect social capital-related crowdfunding research, we must cover its conceptual underpinnings. Social capital originates from sociological studies, which can be traced as far back as Marx's differentiation between a mobilised and effective class-for-itself and an atomised class-in-itself (Portes, 1998). In contemporary sociology, Bourdieu (1986, p. 21) differentiates social capital from human, economic and cultural capital, defining it as 'the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition—or in other words, to membership in a group'.

However, as a multidisciplinary concept, the development of social capital theory has been inhibited by different definitions and inconsistent operationalisations (Payne et al., 2011). According to Coleman (1988), social capital constitutes a particular kind of resources available to an actor, which inheres in the structure of relations between actors and among actors. Burt (1992, p. 9) focuses on social networks and defines social capital as 'friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital'. Nahapiet and Ghoshal (1998) develop a broader concept of social capital that comprises both the network and the assets that may be obtained through it. In their definition, social capital consists of three dimensions – structural, relational and cognitive – each of which covers several facets. To integrate various definitions of social capital, Adler and Kwon (2002) classify 23 distinct definitions of social

capital into external, internal and 'both' perspectives. The external perspective (e.g. Burt, 1992) considers social capital to be a resource that is embedded in the social networks of a focal actor; the internal perspective (e.g. Coleman, 1988) focuses on the linkages among individuals in a collective; the 'both' perspective (e.g. Nahapiet and Ghoshal, 1998) is neutral and assumes that social capital exists both inside and outside of the collective.

We choose Nahapiet and Ghoshal's (1998) classification for our literature review for two reasons.² First, a broader concept of social capital such as this one encompasses multiple social capital theories. For instance, Burt's (1992) social networks belong to a structural dimension, and Coleman's (1988) social norms are a facet of relational social capital. Second, this classification is more influential in business and management research (Lee, 2009) and has provided the theoretical foundation for seminal research on social capital in this field (Inkpen and Tsang, 2005; Tsai and Ghoshal, 1998; Wasko and Faraj, 2005). Adopting this definition helps us to gain more keywords about social capital, thereby enabling us to collect all the relevant social capital-related crowdfunding research. Researchers have largely applied this classification within crowdfunding research (see Eiteneyer et al., 2019; Madrazo-Lemarroy et al., 2019; Skirnevskiy et al., 2017; Zheng et al., 2014); meanwhile, other crowdfunding research that adopts other social capital theories (e.g. internal and external social capital) can also be included in this framework. Below, we briefly define the three dimensions and their facets. See Table 1 for more detailed information about these facets.

Structural social capital refers to the overall pattern of connections between the individuals embedded in social networks (Nahapiet and Ghoshal, 1998). The concept of structural social capital originates from structural embeddedness, which concerns the network of relationships and social systems as a whole (Granovetter, 1992). Researchers measure structural social capital by the connections and links between individuals. Individuals can benefit through their network ties, including getting jobs, acquiring information and obtaining resources (Tsai and Ghoshal, 1998). *Relational social capital* derives from relational embeddedness, which describes the interpersonal relationships developed through individuals' interactions (Granovetter, 1992); it refers to the capital that is rooted and leveraged in these relationships (Tsai and Ghoshal, 1998). Nahapiet and Ghoshal (1998) suggest that there are different facets of relational social capital – including trust, obligations,

Table 1
Facets of each social capital dimension

Dimension	Facet	Source
Structural social capital	Social network	Nahapiet and Ghoshal (1998)
Relational social capital	Trust	Nahapiet and Ghoshal (1998); Inkpen and Tsang (2005)
	Social norms	Nahapiet and Ghoshal (1998)
	Obligations	Nahapiet and Ghoshal (1998)
	Identity / identification	Nahapiet and Ghoshal (1998)
	Reciprocity	Chiu, Hsu and Wang (2006); Wasko and Faraj (2005)
Cognitive social capital	Commitment	Requena (2003); Wasko and Faraj (2005)
	Communication	Requena (2003)
	Shared goals	Inkpen and Tsang (2005)
	Shared culture	Inkpen and Tsang (2005)
	Shared values	Cohen et al. (2001)

² We only adopt Nahapiet and Ghoshal's (1998) classification for our data collection. For conceptualisation, we integrate this classification and the internal-external dimensions because there is a clear boundary between internal and external social capital in crowdfunding contexts (see Section 3).

norms and identity – that affect individuals' behaviours. Relational social capital research involves more facets, including reciprocity, commitment and communication (see Table 1). *Cognitive social capital* refers to the resources that provide shared interpretations, representations and meaning in a group (Nahapiet and Ghoshal, 1998). Cognitive social capital facilitates a mutual understanding of the common goals and norms in the society (Tsai and Ghoshal, 1998). At the organisational level, cognitive social capital contributes to the creation of intellectual capital (Nahapiet and Ghoshal, 1998), whereas at the individual level, it affects personal knowledge contributions to the network.

Based on this summary of the facets of social capital, we expand our search scope from crowdfunding studies that explicitly mention 'social capital' to those that refer to facets of social capital. Therefore, we cover all facets of social capital to thoroughly analyse how these facets develop through crowdfunding activities and how they affect crowdfunding dynamics.

2.2. Literature collection, synthesis and analysis

Our objectives are to synthesise social capital-related crowdfunding research through a dynamic perspective and to build a conceptual model. Therefore, we collect relevant research on social capital and crowdfunding, summarise how different social capitals influence crowdfunding dynamics and integrate them into a conceptual model.

Our paper collection procedure is as follows (see Figure 1). We search through literature in two Web of Science databases – the Science Citation Index Expanded (SCIE) and the Social Sciences Citation Index (SSCI) – using a combination of the keywords 'crowdfunding' and 'social capital' (see Figure 1). To make the collection process transparent and replicable, the 'social capital' keywords only include the facets listed in Table 1. We exclude synonyms for social capital, such as social connections and creditworthiness. We include all (early-access) published papers up until 2019, yielding 352 papers in total. In the next step, we apply a number of exclusion criteria (Torraco, 2005). We only retain literature from relevant fields: business, management, computer science information systems, communication, information science library science, economics, business finance, operations research management science, computer science interdisciplinary applications, sociology, social issues and applied psychology. To ensure that the reviewed papers are high-quality, we only keep papers from Quartiles 1 and 2 (Q1 and Q2), which includes the top 50% of journals based on impact factor as published by Thomson Reuters in the Journal Citation Rank (JCR). Some journals appear in different categories in the JCR; we include them if they are in the Q1 and Q2 in any of the categories.

After analysing the full-text papers, we exclude studies that do not focus on the four principal types of crowdfunding (e.g. some papers only mention crowdfunding to develop their arguments, whereas others focus on civic, medical or self-hosted crowdfunding). We only include papers that consider at least one facet of social capital as a key dependent or independent variable in their hypotheses (in quantitative research) or propositions (in qualitative, conceptual and theoretical research). We exclude papers that feature a social capital-related variable as a key variable but do not treat it as social capital.³ We also exclude literature review papers and research surveys, as these provide limited input for our theory-building objective.

Applying the procedure above yields 108 papers on the relationship between social capital and crowdfunding; this represents our final sample. The detailed classification of the literature into types, dimensions and facets of social capital; stages of the campaign process; and key findings can be found in the Appendix. In terms of journal

³ For instance, Mollick (2014) takes updates and comments as key variables without clarifying that they reflect the communication between fundraisers and backers – thus, we do not consider this paper to be a communication-related study.

coverage, *Technological Forecasting and Social Change* has published eight papers on this topic, followed by the *Journal of Business Venturing* (six papers), *Entrepreneurship Theory and Practice*, *Small Business Economics* and *Electronic Commerce Research & Applications* (five papers each). The distribution of annual social capital-related crowdfunding publications can be seen in Figure 2. Overall, the volume of literature on the relationship between crowdfunding and social capital has risen sharply since 2015.

3. The dynamics of social capital in crowdfunding

3.1. Crowdfunding and the creation of social capital

Social capital can be built through the interactions among the participants of a crowdfunding campaign. While most social capital-related crowdfunding research focuses on the influence of social capital on crowdfunding dynamics, a few studies address the development of social capital during crowdfunding campaigns. Regarding the structural dimension, a case study on a Swedish crowdfunding platform suggests that crowdfunding activities may construct short-term relationships between fundraisers and backers (Ingram Bogusz et al., 2019). Regarding the relational dimension, a field experiment demonstrates that compared to entrepreneurs who choose to simply pre-sell their product, crowdfunding campaign-backers share higher identification with the funded company (Bitterl and Schreier, 2018). Another experimental study finds that campaign success can enhance consumers' trust in the project, thereby increasing fundraisers' social capital (Wehnert et al., 2019). In addition to a campaign's success, the interactions between fundraisers and backers also create social capital, such as backers' psychological ownership of a project, which enhances their commitment (Zheng et al., 2018). Regarding the cognitive dimension, looking at the case of Oculus Rift, a virtual reality campaign on Kickstarter, Gleasure and Feller (2016) find that the interactions related to the project shape a shared culture related to the campaign.

3.2. External and internal social capital

Although Nahapiet and Ghoshal's (1998) dimensions provide a comprehensive overview of social capital, they are difficult to conceptualise because different dimensions are sometimes inherently associated with one other. Especially in crowdfunding research, the boundaries of different dimensions of social capital can be ambiguous. For instance, the number of times that a project has been shared on Facebook can be used to proxy both social identity (Lagazio and Querci, 2018) and social networks (Skirnevskiy et al., 2017). Thus, a clear classification of social capital is needed to fit the crowdfunding contexts.

Adler and Kwon's (2002) internal and external view may fit the nature of crowdfunding. On the one hand, the crowdfunding platform can be considered as a collective, allowing social capital to be developed there. On the other hand, fundraisers also benefit from their own private networks outside of the platform. Colombo et al. (2015) introduce the concept of internal social capital in crowdfunding research to distinguish between the social capital developed within and outside the crowdfunding platform. Although distinguishing external and internal social capital goes beyond Nahapiet and Ghoshal's (1998) dimensions in the crowdfunding context because it features a clear boundary, it still has a limitation. Colombo et al. (2015) mainly focus on relational social capital, describing it as the reciprocity among crowdfunding users. This definition may be too narrow to cover all social capital-related crowdfunding research. A more comprehensive definition of social capital is needed to conceptualise of social capital in crowdfunding contexts.

We integrate two seminal social capital theories (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998) by extending both internal and external social capital into three dimensions. In the crowdfunding context, internal social capital refers to the social networks within the platform and the assets that may be obtained through these networks. By

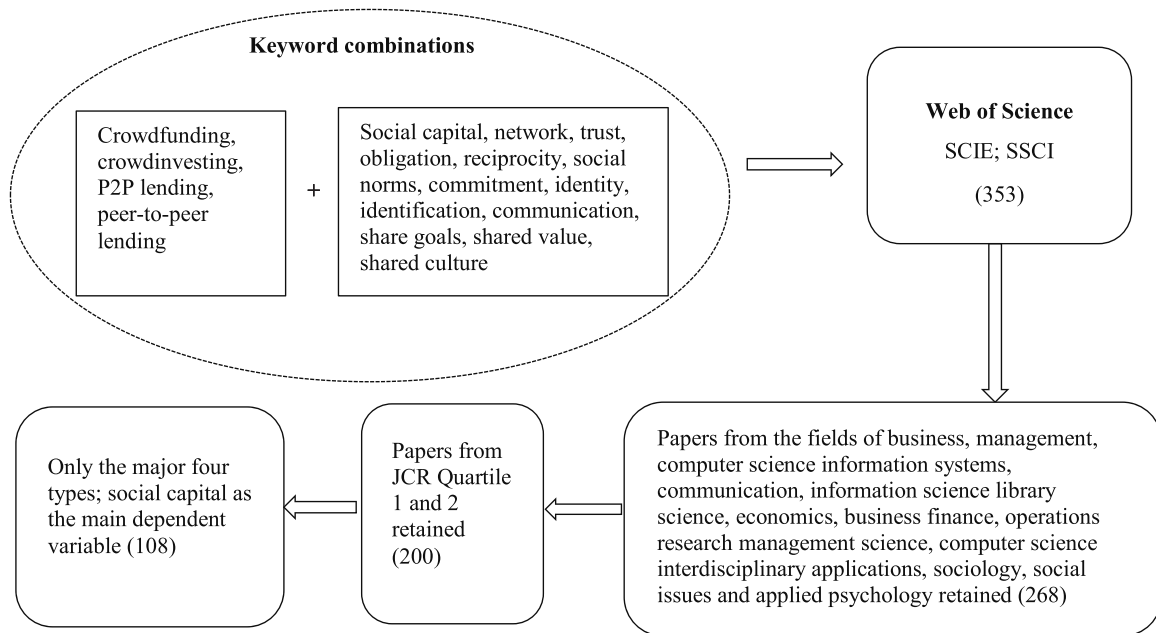


Figure 1. A flow diagram describing the literature collection process.

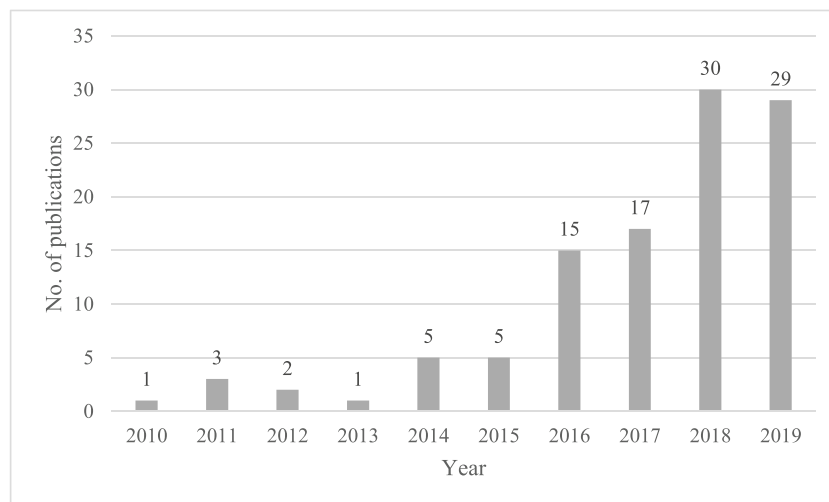


Figure 2. Papers on social capital and crowdfunding by publication year.

contrast, external social capital represents social capital that is developed outside of the crowdfunding platforms. To clarify the distinction, we focus on where the social capital originally forms. For instance, fundraisers’ real-life friends who happen to be investors on the platform are external, whereas their friends from the crowdfunding community with whom they later establish offline connections are still internal.

Both external and internal social capital have three dimensions. Regarding the structural dimensions, external social networks are the social connections formed outside the crowdfunding platforms, such as fundraisers’ family and friends. Internal social networks represent social connections formed within the crowdfunding platform, including direct connections (e.g. previous backers, reciprocal backers and lead investors) and latent ties that may be established on crowdfunding platforms (Borst et al., 2018). The communication mechanism on these crowdfunding platforms makes it possible for fundraisers to reach strangers on the platforms. For instance, potential backers can observe project information that is discussed with fundraisers through reading comments. Furthermore, on some lending crowdfunding platforms (e.g.

Prosper), lenders can form a community and communicate with each other to identify feasible invest opportunities. One type of ambiguous network is the spill over of internal social capital (i.e. crowdfunding backers that share the project to their own social networks) (Skirnevskiy et al., 2017). We classify this type of social network as internal because it is unlikely that backers’ friends will contact a fundraiser outside of the platform. Such connections must still be made through the crowdfunding platform.

In the relational dimension, external trust is established through sharing information, including fundraisers’ financial situations, disclosure of private information, endorsement and verification from a third-party outside of the platform and fundraisers’ social media activity. Fundraisers can also benefit from backers’ external social capital, such as their trust in strangers and social identity caused by gender or career experience. In contrast, fundraisers’ internal social capital comes from crowdfunding activity, such as their previous successful campaigns, comments, backing others’ projects and the project information they provide to backers.

Cognitive social capital receives less attention in crowdfunding research. Perhaps the most effective proxy variable for cognitive social capital is the shared culture, which is measured by cultural similarity, between fundraisers and backers; we classify this as external since the culture is embedded in individuals' living contexts. Internal cognitive social capital includes the shared values and meaning associated with the crowdfunding campaigns. Although Gleasure and Feller (2016) provide some qualitative evidence of how shared value among investors changes over time, it is difficult for quantitative studies to proxy cognitive social capital. Two pieces of research proxy internal cognitive social capital by the length of the textual description (Madrado-Lemarrroy et al., 2019; Zheng et al., 2014); however, this may only reveal the effort that the fundraiser has put into the campaign. Another way to measure internal cognitive social capital is through questioning backers' perceived shared values with the campaign by surveys (e.g. Zhao et al., 2017). A more detailed overview of facets of external and internal social capital is provided in Table 2.

4. Social capital and crowdfunding campaign dynamics

4.1. Social capital in the early stage (stage 1)

The early stage of a crowdfunding campaign potentially features a quick accumulation of funding. The campaign's performance in the early stage is important, as more contributions in this stage result in a higher chance of campaign success (Colombo et al., 2015; Vismara, 2018). Business models vary depending on the different crowdfunding platforms, and some platforms contain hidden stages (Lehner, 2014; Lukkarinen et al., 2016). We define the early stage as the time from the preparation stage until approximately the first sixth period of the live campaign, which is consistent with most quantitative studies (Colombo et al., 2015; Skirnevskiy et al., 2017).⁴ See the Appendix for an overview of these studies.

4.1.1. External social capital in the early stage

External social capital is essential in this stage. Ordanini et al. (2011)

Table 2
The facets of external and internal social capital

Types/ dimensions	External social capital	Internal social capital
Structural	family and friends, social media friends, fans	Reciprocal backers, loyal backers, lead investors, latent ties, backers' social networks, online crowdfunding group
Relational	Fundraisers' financial situation, disclosure of private information (e.g. social media accounts), reputation, social media activities, backers' trust in strangers, offline third-party endorsement and verification, regional social norms, identity caused by industries and gender (same genders or from the same industry)	Online communications including textual description, comments and updates; backers' sharing of the project information; textual, linguistic, visual and content cues; previous backing activities; previous successful campaigns; previous repayment; backers' social media activities
Cognitive	Surveys on the perceived cultural similarity and regional cultural similarity (i.e. shared culture)	Length of project description, questioning backers' perceived shared value with the campaign

⁴ Colombo et al. (2015) and Skirnevskiy et al. (2017) proxy the early stage as the first one-sixth of the entire campaign, while Vismara (2018) measure it as the first 5 days. We choose Colombo's measurement to allow the early stage to vary across campaigns. But it is worth mentioning that the proxy may not hold true in every context.

define this stage as the 'friend-funding' stage because most funding comes from fundraisers' direct connections. Both qualitative and quantitative research in all types of crowdfunding have confirmed this⁵. Skirnevskiy et al. (2017) administer a survey to 106 fundraisers on Kickstarter. They find that about 65% of backers of first-time fundraisers come from external social networks (private and professional networks). Lehner (2014) conducts a qualitative study that covers reward-based, lending-based and equity crowdfunding and identifies two types of social networks: tier 1 (direct and close social connections) and tier 2 (more distant and dispersed crowds). Tier 1 is consistent with the concept of external social capital, whereas tier 2 is more likely to be internal. Lehner argues that tier 1 social capital is essential at the start of the campaign and even during the preparation period. For some equity crowdfunding platforms, fundraisers can collect funding from their private networks during a hidden stage (Brown et al., 2019). Lukkarinen et al. (2016) demonstrate that the more funding there is in the hidden stage, the more likely the campaign is to succeed.

As for relational dimensions, Crosetto and Regner (2018) find that communication efforts (number of posts, videos and blogs) are positively associated with the number of early backers. Dai et al. (2018) proxy trust by the average weekly number of Facebook posts within the six weeks before the campaign is launched. Their results indicate that only the number of campaign-unrelated posts in the early stage is positively associated with campaign success.

At last, one paper studies crowdfunders' bridging social capital, which belongs to external dimension according to previous social capital literatures (Adler and Kwon, 2002). The authors find that compared to those who do not participate in crowdfunding, crowdfunding backers have lower bridging social capital (Medina-Molina et al., 2019). However, we find the results to be less convincing – the authors measure bridging social capital as the degree to which a person is open-minded and desires novelty, which does not fit the definition of bridging social capital as the resource embedded in the networks tying the focal actor to others (Adler and Kwon, 2002). Thus, we remove this paper in the following discussion.

4.1.2. Internal social capital in the early stage

Some equity crowdfunding platforms feature lead investors who provide an investment thesis and disclose potential conflicts of interest to attract follow-up investors (Agrawal et al., 2016; Xiao, 2019). The lead investors are likely to be professional investors, such as angel investors and venture capitalists (VCs). Lead investors hold physical meetings with fundraisers to perform due diligence on projects, thereby developing both cognitive-based and affect-based trust in fundraisers (Xiao, 2019). Internal social capital can be developed through backing others' projects – as Colombo et al. (2015) report, such internal social capital is positively associated with early contributions from backers (their work focused on Kickstarter). Vismara (2018) finds that the percentage of early investors with public profiles is positively associated with the number of early investors in equity crowdfunding. He argues one reason for this could be that it is easy for investors with public profiles to advertise projects on major social networks.

4.2. Social capital in the general campaign process (stage 2)

Not all papers classify crowdfunding campaigns into clear stages – most papers taking a process view focus on backers' decision-making or on the funding raised during the campaign. Considering that the early stage only accounts for the first sixth period, the general campaign process can represent the remaining process, including a slow-growth

⁵ One highly cited paper also demonstrates that investors' family and friends fund disproportionately early in campaigns (Agrawal et al., 2015); however, the journal the article is published in does not fit our selection criteria (it is a Q3 journal).

phase and a 'racing-to-the-target' stage (Ordanini et al., 2011).

4.2.1. External social capital and general campaign process

After conducting a survey covering all types of crowdfunding backers, Polzin et al. (2018) suggest that investors with direct ties to fundraisers are motivated to invest in a project not only for financial returns but to maintain a good relationship with the fundraisers. For reward-based crowdfunding, Mendes-Da-Silva et al. (2016) highlight the positive relationship between geographic proximity between fundraisers and backers and funding intention within the social networks they share. A reward-based crowdfunding paper in the publishing industry suggests that some contributions come from fundraisers' family, friends and fans (Cahalane, 2017). In lending-based crowdfunding, the network tie between fundraisers and lenders can increase their funding intention. Interestingly, fundraisers' friends are less likely to trigger herding among following backers (Liu et al., 2015).

In reward-based crowdfunding, external weak ties – such as acquaintances – may make pledges after the fundraisers reach their target. Foster (2019) reports that the number of Facebook friends a fundraiser has is positively associated with the number of daily backers she or he has. Further, the effect of social networks is stronger after the funding threshold is met than it is before, suggesting that weak ties may tend to support a project only when the campaign has succeeded. Another study notices that pledges fundraisers make also increase after the project reaches its funding threshold. The authors argue that fundraisers may make contributions on behalf of their friends (Crosetto and Regner, 2018). Thus, weak ties to a fundraiser may only support the projects when they receive a signal that the campaign is high-quality.

Fundraisers' non-campaign-related-information can represent their trustworthiness. Fundraisers' reputations are positively associated with their trustworthiness, which increases donation intention (Liu et al., 2018) and reward-based crowdfunding (Liang et al., 2019). External verifications also amplify fundraisers' trustworthiness, which can increase daily contributions to a campaign (Mejia et al., 2019). Trust in strangers is also external. A qualitative study on equity crowdfunding suggests that trust in strangers and in online transactions can enhance investors' funding intention (Kshetri, 2018). Reporting on the results of a lab experiment, Johnson et al. (2018) find that female fundraisers are perceived as being more trustworthy than males and are thus more likely to succeed.

Two papers study external identity in relation to fundraisers. Greenberg and Mollick (2017) demonstrate that female backers tend to support females, especially in industries in which females are under-represented, in reward-based crowdfunding. Riggins and Weber (2017) find that lenders tend to support projects that are in the same industry and fundraisers who have the same gender as they do. Finally, a survey-based study measuring the external social norms reports a positive relationship between social norms and funding intention (Shneor and Munim, 2019).

Some studies suggest that external social capital can affect backers' funding intention through internal social capital. T. Wang et al. (2019) conduct surveys on (potential) donors and find that their external moral obligation and latent ties with fundraisers can enhance their internal social identity toward the online group, thus increasing their funding propensity. Zhao et al. (2017) use structural equation modelling (SEM) to identify how external shared value affects backers' funding intention in reward-based crowdfunding: shared culture enhances trust in fundraisers, and trust promotes commitment to the project, thereby increasing funding propensity. According to their study, both trust and commitment function as internal social capital. Another experiment in reward-based crowdfunding demonstrates a positive relationship between external shared value and trust in fundraisers; however, it finds a nonsignificant relationship between trust in general people (external) and trust in fundraisers (Liang et al., 2019).

4.2.2. Internal social capital and the general campaign process

Internal social capital may be more important in the general campaign process due to the numerous contributions from latent ties as well as to herding among investors that is triggered by internal social capital. Fundraisers exert extensive communication efforts to persuade strangers to make contributions (Estrin et al., 2018). First, fundraisers use communication tools such as platform forums and social media to attract latent ties. The number of comments and updates are positively associated with daily funding amounts or the number of contributions (Block et al., 2018; Borst et al., 2018); this effect is positively moderated by the ease of the language used in updates (Block et al., 2018). Specifically, only content about campaign developments, business developments, new funding and cooperation projects positively affects daily performance, whereas posts about the start-up team, business model, product developments and campaign promotions do not have a significant effect. A study on reward-based crowdfunding (Crosetto and Regner, 2018) suggests that communication efforts (videos and blogs) are only significantly associated with the success of campaigns that failed to raise enough early funding. Such interactions also create other facets of social capital. Mejia et al. (2019) demonstrates that the relationship between work-related updates and monthly donation amounts is based on trust. Fundraisers' social media activity also affects the daily funding amount – weak and latent ties provide more funding when, for example, more Twitter messages are posted (Borst et al., 2018).

Besides communication, there are other facets of internal social capital that encourage backers to support the project. For donation-based crowdfunding, a qualitative study suggests that reciprocity is a rational motivation behind donating to charity (Gleasure and Feller, 2016b). Furthermore, perceived website quality, transaction convenience and project content quality (Liu et al., 2018) and the institutional mechanisms of a platform (platform rules, monitoring and security) affect the perceived trustworthiness of fundraisers (Strohmaier et al., 2019). Both studies demonstrate a positive relationship between trust and funding intention. A study on equity crowdfunding considers project-related, platform-related and fundraiser-related information, finding that all three can enhance trust in a fundraiser and in her or his funding intentions (Kang et al., 2016).

Once the contributions reach a certain threshold, a chain reaction occurs (i.e. herding) – this facilitates rapid growth toward the target (Ordanini et al., 2011). Internal social capital is essential in herding behaviours in crowdfunding because, as previous research suggests, herding is less likely to be triggered by fundraisers' friends (Liu et al., 2015) and by fundraisers' self-pledges (Crosetto and Regner, 2018). In contrast, Lehner (2014) suggests that fundraisers' latent ties can translate into economic capital in this period. Herding behaviours largely rely on word of mouth (WoM) spreading through backers' social networks. A qualitative study on equity crowdfunding finds that fundraisers focus on building new networks by interacting with potential new investors on the crowdfunding platform during this stage (Brown et al., 2019). In addition, several quantitative studies explore the backers' networks (i.e. latent ties for fundraisers). In a field experiment on donation-based crowdfunding, researchers invite their friends to evaluate the willingness to support a social enterprise. The researchers demonstrate that the strength of the network ties between the referees (i.e. researchers) and their friends can enhance backers' funding propensity through a sense of obligation (Simon et al., 2019). One paper on lending crowdfunding reports that a potential lender is more likely to invest in a project if her or his friends have made a bid; furthermore, the influence of offline weak ties is much higher than online friendship (Liu et al., 2015).

Another set of papers uses proxy variables instead of an actual relationship to represent backers' networks. Kang et al. (2017) examine proxy backers' social networks by looking at the total number of Weibo followers⁶ of all the backers whose Weibo accounts are linked with the

⁶ Weibo is a Chinese social media website (see <https://weibo.com/>).

fundraiser on a given day. The results suggest that backers' social capital has a positive effect on the funding raised the next day. Similarly, [Hervé et al. \(2019\)](#) proxy backers' social networks by the average time that a person spends on social interactions in the location per day. The results indicate that backers living in more sociable areas tend to invest significantly more money. Finally, [Hong et al. \(2018\)](#) use backers' network embeddedness (the degree to which the backers share mutual connections) based on their Twitter posts associated with the campaign. They find that network embeddedness positively moderates the relationship between Twitter activities and daily funding the next day. Theirs is the only paper studying the whole network structure. Other concepts such as network density and structural holes are missing in crowdfunding research. The main reason for this is that unlike these backers, traditional private equity investors such as business angels and VCs have to interact with each other if they co-invest in a project. Co-investing in crowdfunding may not create network ties between backers, making it difficult to measure the entire network structure.

The relational dimension also matters in herding. For instance, a referee's recommendations can create trust in a fundraiser and therefore facilitate potential connections. [Bagheri et al. \(2019\)](#) conduct qualitative research in which they interview 13 donors in crowdfunding. They find that trust in fundraisers can be created through recommendations from friends and celebrities. Furthermore, trust in lead investors in equity crowdfunding can persuade investors to make a pledge ([Xiao, 2019](#)). A conceptual analysis indicates that crowdfunding platforms can function as a network, which creates peer influence on network members and leads to collective action ([Nielsen, 2018](#)). However, [Simon et al. \(2019\)](#) manipulate the trustworthiness of the fundraiser by mentioning referees' academic titles (i.e. Dr or Prof) in field experiments but find a nonsignificant effect. Finally, early backers' behaviours may create social norms. In reward-based crowdfunding, [Burtch et al. \(2016\)](#) find that concealing early backers' information (e.g. their identities and investment amounts) can be perceived as a social norm, thereby discouraging future investors who are following the campaign to disclose their information and make contributions.

Finally, two studies suggest that the influence of internal social capital will decrease if the campaign succeeds. In equity crowdfunding, the interactions between fundraisers and backers as well as several linguistic cues (e.g. using 'we' instead of 'I') significantly decrease after the funding threshold is reached ([Dorfleitner et al., 2018](#)). Similarly, backers' intention to share project information reduces after the funding target is reached ([Li and Wang, 2019](#)).

4.3. Social capital and funding performance⁷ (stage 3)

4.3.1. External social capital and funding performance

Fundraisers' social media networks are external social capital that can predict campaign performance. Most research has demonstrated a positive relationship between the number of social media friends that fundraisers (or projects) have and campaign success in donation crowdfunding ([Saxton and Wang, 2014](#)), reward-based crowdfunding ([Bao and Huang, 2017](#); [Li and Martin, 2019](#); [Mollick, 2014](#); [Zheng et al., 2014](#)) and equity crowdfunding ([Vismara, 2016](#)). Whether fundraisers post their social media accounts online is also associated with campaign performance in equity crowdfunding ([Lukkarinen et al., 2016](#)). [Ahlers et al. \(2015\)](#) proxy social networks based on the share of non-executive directors on the projects' boards and find a nonsignificant relationship. Measuring social networks by online friendship hierarchy, as [Lin et al. \(2013\)](#) found on Prosper, suggest that a higher number of borrowers' friends, especially the 'lender-friends' (i.e. friends who have a lending

⁷ Research uses several indicators to measure funding performance, such as funding success, total amount raised, funding percentage and time to success. For lending crowdfunding, lower interest rates also reflect campaign performance.

history) and real friends who bid online, increases funding probability and reduces financial interest rates.

In terms of the relational dimension, [Kshetri \(2015\)](#) builds an institutional theory for crowdfunding contexts, arguing that funding campaigns covering all types of crowdfunding in an economy in which residents trust strangers in online transactions are more likely to succeed. For donation crowdfunding, [Schäfer et al. \(2018\)](#) proxy trust by examining third-party endorsements, including media testimonials and scientific sponsors. After controlling for the communication between fundraisers and backers, the researchers find a nonsignificant effect on funding performance. For reward-based crowdfunding, [Kim et al. \(2017\)](#) argue that disclosing their identity (their name and their picture) strongly affects fundraisers' trustworthiness. Portraying the same identity as the backers creates similarities between the fundraisers and the backers, making them more likely to succeed in reward-based crowdfunding ([Oo et al., 2019](#)). Two papers study the moderating effect of social capital. External endorsements and the previous backing of projects have no moderating effect on the relationship between positive language and funding performance ([Anglin et al., 2018](#)). Localised relational social capital (measured by voter turnout, recycling, the number of non-profit organisations and people's satisfaction with friends) can enhance the positive effect of local altruism on funding performance ([Giudici et al., 2018](#)).

In lending-based crowdfunding, borrowers' economic status reflects their external trustworthiness. Research suggests that some indicators of a better financial situation, including credit score,⁸ debt-to-income ratio, home ownership, verified bank account ([Feller et al., 2017](#); [Greiner and Wang, 2010](#)) and the number of verifications for first-time borrowers ([Cai et al., 2016](#)) are positively associated with funding performance (funding percentage and lower interest rate). Endorsement from external third parties also matters. Not only the endorsement itself, but the type of third party (i.e. a non-profit organisation) and the promise between the third party and borrowers, are positively associated with funding performance ([Dorfleitner et al., 2019](#)). Moreover, fundraisers disclosing their social media account information also enhances their trustworthiness, thereby increasing campaign performance. Lastly, [Dai et al. \(2018\)](#) study the trust that Facebook posts develop during the campaigns, finding that only campaign-related posts during the crowdfunding campaign are positively related to campaign success.

Finally, two papers study the influence of social capital on performance at the aggregated level. [Burtch et al. \(2014\)](#) explore the relationship between cultural distance – measured by the distance between two country pairs in a two-dimensional culture map – and the number of lending actions between them. The results suggest that shared culture leads to more transactions. The researchers also find a positive relationship between trust in strangers and flow volume. [Dejean \(2020\)](#) focuses on structural social capital. The researcher proxies the social networks between two regions by the number of people living in one region but born in the other one, finding a positive relationship between social networks and transaction flow from one region to the other.

4.3.2. Internal social capital and funding performance

Internal social capital is embedded in the online crowdfunding community. There is only one theoretical paper that uses co-utility functions to study the relationship between fundraiser-backer cooperation and funding outcomes. The results suggest that when investors completely trust entrepreneurs, and entrepreneurs are willing to disclose all their information, investors and entrepreneurs achieve Pareto optimality in lending crowdfunding ([Turi et al., 2017](#)). Other studies use various proxies for social capital to study the role of internal social capital. The use of social media networks is related to both structural and relational social capital. [Madrado-Lemarroy et al. \(2019\)](#) use three

⁸ Although the platform evaluates credit scores, we treat them as external because they are based on fundraisers' financial conditions.

types of social network interactions to measure structural social capital: the total amount of ‘likes’ by potential investors on Facebook, the number of comments on Facebook and the number of times that the project has been shared on Facebook. Another paper measures such interactions through the frequency of backers’ information-seeking and advocacy comments as well as the frequency of fundraisers’ feedbacks, replies and updates (Zheng et al., 2016). Other studies use Facebook shares to represent identity toward the project (Kromidha and Robson, 2016) and social networks in general (Lagazio and Querci, 2018). All these studies demonstrate a positive relationship between social capital and funding performance in reward-based crowdfunding.

Repeated backing and launching a successful campaign can create an online community in which internal social capital can develop. On Prosper, participants form online groups and make decisions together. Endorsements from group leaders and ratings from groups in the lending-crowdfunding community can increase backers’ trust in borrowers (Chen et al., 2016; Greiner and Wang, 2010); further, borrowers’ affiliated group size can reflect their structural social capital (Chen et al., 2016). One paper suggests that the third party’s experience on the platform is positively associated with funding performance (Dorfleitner et al., 2019). On a Korean lending-based crowdfunding platform, lenders can evaluate the trustworthiness of the borrower by votes, allowing subsequent lenders to make the decision based on the votes (Yum et al., 2012). In reward-based crowdfunding, the number of previously backed projects reflects backers’ relational obligations and structural reciprocity (Bao and Huang, 2017; Buttice et al., 2017; Colombo et al., 2015; Davies and Giovannetti, 2018; Li and Martin, 2019; Madrazo-Lemarroy et al., 2019; Zheng et al., 2016, 2014). André et al. (2017) proxy reciprocity as the proportion of pledges whose amount is higher than the actual reward. The studies mentioned above demonstrate a positive relationship between social capital and funding performance – with the exception of affiliated group size. In contrast, a larger online group leads to lower group cohesion, thereby reducing the project’s success rate (Chen et al., 2016).

Communication tools such as comments, updates and videos are essential in crowdfunding campaigns. Social media activities and email communication can promote funding success (Bushong et al., 2018). One conceptual paper argues that frequent updates are important to funding success for lending-based crowdfunding (Paschen, 2017). The existence of feedback mechanisms is also positively associated with funding performance in donation-based crowdfunding (Schäfer et al., 2018). The number of comments and updates has been demonstrated to be positively related to funding performance in reward-based crowdfunding (Kim et al., 2017; Kromidha and Robson, 2016; Lagazio and Querci, 2018; Madrazo-Lemarroy et al., 2019; T. Wang et al., 2018; Yin et al., 2019) and lending crowdfunding (Xu and Chau, 2018). In addition, the quality, perceived accuracy and length and speed of replies are positively related to campaign success (T. Wang et al., 2018; Z. Wang et al., 2019; Xu and Chau, 2018); comment sentiment can moderate the effect of comment quality (T. Wang et al., 2018). Du et al. (2019) use a ‘WeChat communication index’ that combines the number of views and ‘likes’ a peer-to-peer (P2P) lending platform receives from users to measure communication between users and platforms. They report a positive relationship between the communication index and the number of new users.⁹

Further research explores the length of a project description as well as textual and visual cues in communication. Two papers argue that the length of a project description (Zheng et al., 2014) or the number of words, adjectives or qualifiers and sentences used in a description (Madrazo-Lemarroy et al., 2019) can represent cognitive social capital in reward-based crowdfunding. Greiner and Wang (2010) use the length of a project description to proxy fundraisers’ trustworthiness in lending

crowdfunding. All three studies find a positive relationship between social capital and funding performance. Caldieraro et al. (2018) propose a countersignalling theory and argue that high-quality borrowers do not need to write a loan description to overcome information asymmetry because they will get higher credit scores on a P2P lending platform. The empirical results suggest that both a missing loan description and the length of the description are positively associated with campaign performance in lending-based crowdfunding.

Both the content and the use of language also matter in creating social capital. Gafni et al. (2019) argue that fundraisers’ self-mentions can enhance backers’ trust in them. They use a survey to demonstrate the validity of the proxy variables. The narratives that mention fundraisers’ trustworthiness can also increase trust in them (Herzenstein et al., 2011). Jancenelle and Javalgi (2018) proxy reciprocity using text cues such as *justifi** and *reciproc**. The results suggest that the contents of project descriptions are positively associated with campaign performance. Furthermore, language that uses the first person plural (such as ‘we’ instead of ‘I’) in communication evokes social identity (Allison et al., 2017; Dorfleitner et al., 2018). Chen et al. (2018) suggest that the more punctuations, which are less formal in writing, are used in a project description, the less fundraiser’s trustworthiness is. Using differentiating language is positively associated – whereas accountability language is negatively associated – with funding success (Kim et al., 2016). Parhankangas and Renko (2017) focus on the language style and find a positive relationship between the use of concrete language (and interactive style) and funding success. In contrast, the impact of precise language and low physiological distance is nonsignificant.

Finally, visual cues (e.g. photographs) are important and can act as trust-builders (Greiner and Wang, 2010). Duarte et al. (2012) measure trust in fundraisers via a survey in which professional image-processing workers rate fundraisers’ trustworthiness based on their photos (the pictures sometimes contain items that reflect owners’ wealth, including houses, cars, boats and business establishments). Both studies find that trust is positively associated with funding performance in lending-based crowdfunding. Researchers tend to study campaign videos using a communication perspective. The existence of a video is positively associated with funding performance in reward-based (Li et al., 2019), lending-based (H. Wang et al., 2019) and donation-based (Xu, 2018) crowdfunding; there is no significant correlation in equity crowdfunding (Mamonov and Malaga, 2018). More specifically, the duration of the video and its visual variation (measured by machine learning) are also positively associated with campaign success (Li et al., 2019).

4.4. Social capital and post-campaign performance (stage 4)

A successful campaign is not the end of crowdfunding activities. Post-campaign activities include reward deliveries (products and repayments), further operations and follow-up rounds of financing. Whereas in previous discussions, social capital is mostly positively associated with campaign performance, the relationship between social capital and projects’ post-campaign performance is inconclusive.

4.4.1. External social capital and post-campaign performance

Whether borrowers can receive the repayment in time has been largely discussed in lending crowdfunding research. Normally, the default probability is negatively associated with funding performance (e.g. funding success and funding percentage), which is consistent with our findings in Section 4.3. The number of borrowers who bid on and won the campaign (Lin et al., 2013), and fundraisers in better financial situations (Feller et al., 2017), are negatively associated with defaulting on payments in the future. Furthermore, if a borrower discloses her or his social media information on the platform, she or he is less likely to default because of social stigma – the number of fans, friends and followers is negatively associated with default probability (Ge et al., 2017). The authors also find a significant decrease in loan default rate and an increase in default repayment probability after a platform encourages

⁹ We treat funding performance as the increasing number of users, as this can reflect a platform’s performance.

borrowers to disclose their social media information. However, another study suggests that disclosing social media information is positively associated with default (Sonenshein et al., 2011).

For reward-based crowdfunding, fundraisers' external social networks can enhance the positive effect of the amount of total pledges and the probability of receiving subsequent professional investments (Roma et al., 2017). However, the external social capital may discourage the fundraiser from using crowdfunding again. Both qualitative and quantitative studies suggest that the more money that fundraisers receive from strong ties, the less likely they are to run crowdfunding campaigns in the future (Davidson and Poor, 2015, 2016). Skirnevskiy et al.'s (2017) survey demonstrates that failed repeated campaigns attract fewer backers from external networks than successful repeated campaigns.

4.4.2. Internal social capital and post-campaign performance

Internal social capital plays a more important role than external social capital in post-campaign activities. Several studies discuss the delivery of products or repayments. Using machine-learning approaches, Siering et al. (2016) find that the specificity, uncertainty and informality of the communication contents as well as the affect, complexity and diversity of the language can predict campaign default in donation-based crowdfunding. Other research focuses on lending-based crowdfunding. In line with the results in Section 4.3, default probability is positively related to the borrowers' affiliated group size, but it is negatively associated with leader endorsement (Chen et al., 2016). In contrast, trust as evaluated by the content of pictures (Duarte et al., 2012) and the length of the loan description (Caldieraro et al., 2018) is negatively related to default rates.

A study exploring how internal social capital (covering structural, relational and cognitive dimensions) affects backers' involvement suggests that network interactions and reciprocity are positively associated with involvement as information sources and product co-developers (Eiteneyer et al., 2019). Butticiè and Noonan (2020) focus on the role of active backers, finding that for novice fundraisers, attracting numerous active backers is positively associated with product commercialisation but negatively related to the quality of the product. However, the effect of active backers on product quality is positive for serial fundraisers. Two qualitative studies consider crowdfunding to be an ecosystem in which networks are essential in co-producing services and co-creating value (Quero and Ventura, 2019; Quero et al., 2017). As for equity crowdfunding, Di Pietro et al. (2018) suggest that companies that exploit crowd networks (i.e. developing relationships with relevant stakeholders) exhibit higher survival rates and performance two years later.

Loyal backers also show high identification, psychological attachment and connections with projects, which may support the projects' operation. An experimental study finds that compared to customers who participate in a pre-sell campaign to support a store, crowdfunding backers are more likely to consume in that store (Bitterl and Schreier, 2018). The interactions between fundraisers and backers lead to backers' psychological ownership of and commitment to a project (Zheng et al., 2018). In equity crowdfunding, the weak ties formed during the campaign can be transferred to business connections for the fundraisers to use in future cooperation (Brown et al., 2019).

For reward-based crowdfunding, launching successful campaigns can create internal social capital. Relational trustworthiness and loyal backers support subsequent crowdfunding campaigns (Butticiè et al., 2017; Davies and Giovannetti, 2018; Kim et al., 2017; Skirnevskiy et al., 2017). In addition, these loyal backers tend to support the project at an early stage (Skirnevskiy et al., 2017). The validity of the proxy variable holds in lending-based crowdfunding – borrowers' previous successful experiences with a fundraiser are associated with their trust in the fundraisers (Cai et al., 2016; Greiner and Wang, 2010; Yum et al., 2012). Furthermore, repaying the loan in time or in advance can also increase the trustworthiness of borrowers (Yum et al., 2012). All these studies

except for Cai et al. (2016) find a positive relationship between trust and subsequent funding performance.

5. Discussion

In this paper, we use a dynamic perspective to analyse how social capital affects crowdfunding activities (including early-stage performance, general processes, campaign performance and post-campaign performance). Most studies support the notion that both external and internal social capital are positively associated with most indicators of crowdfunding performance (excluding post-campaign performance) for all types of crowdfunding.

Nonsignificant effects of social capital may be caused by a number of factors. For instance, although most studies proxy social networks by the number of social media friends a fundraiser has, some scholars use different measurements that yield a nonsignificant relationship (Ahlers et al., 2015). Further, the impact of a facet of social capital may also be explained by another facet. For example, Simon et al. (2019) find that obligation instead of trust is positively associated with funding propensity. Considering that the different facets of social capital may be correlated with one other, the effect of trust may become significant after omitting obligation. Most papers discuss the different facets of social capital and demonstrate that at least one facet is positively associated with crowdfunding dynamics. The only exception is Mamonov and Malaga (2018), who find no relationship between a campaign video and campaign success. Thus, the positive relationship between social capital and funding activities is relatively robust in these studies.

Interestingly, the influence of internal or external social capital on crowdfunding activities changes over time. During the early stage of a campaign, external social capital may be more essential than internal social capital, as most of the funding comes from fundraisers' direct ties (Ordanini et al., 2011; Skirnevskiy et al., 2017). A relatively smaller proportion of funding comes from internal networks such as lead investors and reciprocal investors. During the later stage, due to word of mouth communication among backers and large contributions from latent ties, internal social capital surpasses external social capital by collecting more funding and triggering herding among potential backers (Brown et al., 2019). Two studies suggest that after reaching the target, some of the weak ties from external social capital start making contributions (Crosetto and Regner, 2018; Foster, 2019), whereas internal social capital – such as the interactions between fundraisers and backers and backers' social media activity – decrease after reaching the funding threshold (Dorfleitner et al., 2018; Li and Wang, 2019). The role of external social capital may become even weaker in the post-campaign period (especially for serial crowdfunding campaigns): too much funding from external networks discourages fundraisers from running a repeated crowdfunding campaign (Davidson and Poor, 2015, 2016), and their private networks become less supportive in subsequent campaigns (Skirnevskiy et al., 2017). However, networks formed from the campaign also participate in cocreating products (Eiteneyer et al., 2019; Quero et al., 2017; Quero and Ventura, 2019), thereby promoting firm operations. Furthermore, internal loyal backers are very supportive in following crowdfunding campaigns (Butticiè et al., 2017; Colombo et al., 2015). Based on the argument above, we conceptualise the role of external and internal social capital in crowdfunding campaigns over time in Figure 3.

6. Conclusion and avenues for future research

6.1. Conclusion and limitations

Crowdfunding is an inherently social phenomenon. To advance our understanding of the crowdfunding phenomenon and its success, we systematically reviewed the literature on social capital and crowdfunding to answer three research questions. We propose that fundraisers' social capital stems from two sources: within and outside the

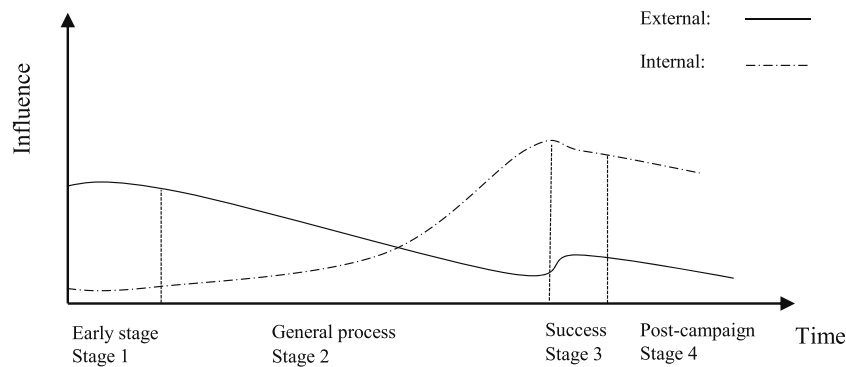


Figure 3. The impact of external and internal social capital over time.

crowdfunding platform. Thus, we classify social capital into external and internal dimensions. We conceptualise internal social capital as the social networks within the platform and the assets that may be obtained through these networks. External social capital represents social capital that is developed outside of the crowdfunding platforms. Both external and internal social capital have three dimensions: structural, relational and cognitive. This conceptualisation of social network helps us to understand social capital-related crowdfunding research more comprehensively.

With regard to our last question, most of the studies indicate that both external and internal social capital are positively associated with crowdfunding dynamics. Using a dynamic perspective, the impact of external and internal social capital changes over time: External social capital is essential in the early stage of campaigns because fundraisers largely rely on their private networks to raise funding, whereas its influence decreases as the campaign unfolds, especially in the post-campaign period. If more funding comes from external networks, fundraisers are reluctant to run a follow-up campaign. The impact of internal social capital increases over time by triggering herding among potential backers. Therefore, exploiting internal social capital is beneficial to the funded firms' operation and repeated crowdfunding campaigns.

As this is a first attempt to develop a conceptual model of how social capital affects crowdfunding dynamics, our research has some limitations. First, we only provide general characteristics of crowdfunding dynamics. Due to the heterogeneous contexts involved, our conclusions may not hold true for every crowdfunding platform in every context. Second, the identification of crowdfunding phases (especially the early stage) relies on previous empirical papers, meaning that it may be not precise enough to capture the nature of crowdfunding dynamics. Finally, due to these limitations, some of the conclusions our conceptual model leads us to may be incomplete. For instance, we argue that the influence of external social capital may become weaker in the post-campaign period based on three empirical papers analysing reward-based crowdfunding. Further research is needed on these aspects.

6.2. Future research

6.2.1. The negative aspects of social capital

Most of the research suggests that social capital plays a positive role in crowdfunding campaign performance; however, previous research has found some 'dark sides' of social capital in entrepreneurial finance. For instance, regional trust has a positive effect on venture capital investments but a negative effect on successful exits (Bottazzi et al., 2016). Both external and internal social capital may have negative effects on crowdfunding campaign dynamics. That fundraisers' private networks invest in a project is mainly caused by a sense of obligation and affect-based trust instead of cognition-based trust. Moreover, some

latent ties are also driven by affect-based trust toward fundraisers' friends, celebrities and lead investors. Such social capital may also lead to the success of low-quality projects, thereby resulting in worse post-campaign performance. Although several qualitative studies point out social capital's weakness in crowdfunding dynamics, such as high communication costs (Lehner, 2014) and potential conflicts of interest between lead investors and followers (Agrawal et al., 2016), Buttice and Noonan's (2020) is the only quantitative study that finds a negative influence of active backers on product quality. Further research may shed light on the dark sides of social capital in firms' post-campaign performance, such as survival and subsequent funding rounds.

6.2.2. Cross-level studies

Most crowdfunding studies take place at the micro level, focusing on investors or campaign performance. At the macro level, only one published paper considers social capital as a type of informal institution (Kshetri, 2018) that can take the place of formal institutions to somewhat protect crowdfunding investors. Previous research suggests that in locations where formal institutions are deficient, social capital plays a more important role in the development of firms (Peng and Heath, 1996), financial markets (Allen et al., 2005; Guiso et al., 2004) and economies (Allen et al., 2005) than in places with stronger legal protections. Rau (2017) considers social capital to be an informal institution, which positively affects national crowdfunding volume. However, Rau (2017) does not take the interaction between social capital and legal institutions into consideration. Future research should explore whether the legal environment moderates the effect of social capital on funding propensity.

Social capital also exists at the platform level (e.g. investors' networks on the platforms as the structural social capital, trust in the platform as the relational social capital and shared value among investors on the platforms as cognitive social capital); this concept has received very little attention in the literature. Cosma et al. (2019) measure platforms' networks by the number of partners and their diversification as the different types of network partners. They find that the variety of partners can increase the success rate of the campaigns on the platforms. Hence, we expect that social capital at the platform level affects both investors' decision-making and the total transaction volume on the platform.

6.2.3. Longitudinal research for equity crowdfunding

Compared to reward-based and lending crowdfunding, little attention has been paid to the impact of social capital on the post-campaign performance of equity crowdfunding. Considering that investors in equity crowdfunding hold the equity shares of the funded companies, it is important to understand what affects firms' post-campaign performance. Several studies investigate how projects' performance in equity crowdfunding affects their probability of receiving follow-up

investments (Cumming et al., 2019; Signori and Vismara, 2018); however, they ignore the role of social capital.

According to previous research, entrepreneurs make use of their social networks in order to reach venture capitalists (Zhang et al., 2010). The network ties between fundraisers and venture capitalists affect their funding decisions (Shane and Cable, 2002); some professional investors also participate in equity crowdfunding (Xiao, 2019). Similar to the concept of loyal backers who are inclined to become involved in product cocreation, professional and sophisticated investors in equity crowdfunding may also actively promote a firm’s development. Consequently, we suggest that future researchers investigate the influence of fundraisers’ social capital on projects’ post-campaign performance.

6.2.4. The causal effects of social capital

Previous research on the relationship between social capital and crowdfunding performance has centred on the correlation between these two factors. Thus, further research that establishes a causal relationship is needed to examine whether social capital contributes to crowdfunding success. Measurement errors of social capital may cause endogeneity – especially, some proxy variables for social capital are largely related to unobservable variables. For instance, fundraisers’ previous successful campaigns are associated with their capability, and backing their other campaigns may be caused by homophily. Future researchers could control for these unobservable variables to avoid bias in their estimates.

Cai and Polzin (2019) study on the causal effect of social capital uses geographic proximity as the instrumental variable for network ties between investors, and y demonstrate that such ties can trigger herding in crowdfunding. Experiments could also be employed to study the causal effect of social capital in the crowdfunding context. Several of the studies we mentioned earlier adopt web-based or field experiments to study the effect of social capital, such as trust (Liang et al., 2019) and identity (Allison et al., 2017; Simon et al., 2019), on campaign success or on investors’ funding propensity. An experimental design would allow researchers to manipulate the quality of the fundraisers and the project, thereby identifying the causal effect of the independent variables. Other facets of social capital have been studied in experimental research (e.g. Seinen and Schram, 2006). Following these studies, scholars should study the causal effect of other facets of social capital on crowdfunding success.

CRediT author statement

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Appendix A. Selected research

Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Greiner and Wang, 2010)	Both	3	Quantitative	Lending	Relational	Trust	Borrowers’ economic status, group rating, group leader reward rate, and endorsements	Percentage of funding; spread borrower rate above prime rate	Empirical supports are found for the positive relationships between higher credit grade, lower debt-to-income ratio, the presence of a bank account, a previously successful loan, higher group ratings, endorsements from other community members and funding percentage (spread above prime rate).
(Ordanani et al., 2011)	Both	1,2,3	Qualitative	Donation/Reward/Equity lending	Structural/Relational	Network/identification	NA.	NA.	Backers in all three models are motivated by identification; social networks in three phases.
(Sonenshein et al., 2011)	External	3,4	Quantitative	Quantitative	Relational	Trust	Social account	Campaign success; default	Two field studies suggest a positive relationship between social account and funding success, but a negative relationship with long-term performance (likely to default). A lab experiment suggests that social account can enhance the trustworthiness of fundraisers.
(Herzenstein et al., 2011)	Internal	3,4	Quantitative	Lending	Relational	Trust	Narratives that mention fundraisers’ trustworthiness to	Funding percentage, interest rate reduction, loan performance	The narratives mention fundraisers’ trustworthiness are (continued on next page)

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Yum et al., 2012)	Internal	3	Quantitative	Lending	Relational	Trust/ communication	pay bills on time and their great careers Crowd votes on trust in borrowers, investment, and repay history, # of Q&A	Funding success	positively associated with funding performance. Crowd votes, transaction, early payment frequency, and communication are positively associated with campaign success.
(Duarte et al., 2012)	External	3,4	Quantitative	Lending	Relational	Trust	Professional workers' evaluation based on fundraisers' photos	Funding percentage, interest rate, default	Borrowers who exhibit more trustworthy have higher probabilities to get a loan, get higher credit scores, and less likely to default.
(Lin et al., 2013)	External	3,4	Quantitative	Lending	Structural	Network	Online friendship hierarchy	Funding success, interest rate, default	Borrowers' friends, especially the real friends who bid on the campaign are positively associated with campaign performance.
(Burtch et al., 2014)	External	3	Quantitative	Lending	Cognitive	Shared culture	Cultural difference based on World Values Survey	The count of lending actions from one country to the other	Cultural difference results in fewer transactions between two countries.
(Mollick, 2014)	External	3	Quantitative	Reward	Structural	Network	Number of Facebook followers	campaign success; percentage funded	Fundraisers' Facebook friends size can predicts the success of campaign.
(Lehner, 2014)	Both	1,2	Qualitative	Equity/ Lending/ Reward	Structural	Network	NA.	NA.	External social capita is important in the beginning; it's essential for fundraisers to build social capital during the campaign; too much social capital may cause higher communication costs.
(Zheng et al., 2014)	Both	3	Quantitative	Reward	Structural/ Relational/ Cognitive	Network/obligation/ shared meaning	Social media size, previous backing projects, length of project description	Funding percentage	All facets are positively associated with funding performance.
(Saxton and Wang, 2014)	External	3	Quantitative	Donation	Structural	Network	Number of Facebook friends	Total Donations	Nonprofit organizations with more fans on Facebook receive more charitable contributions
(Liu et al., 2015)	External	1,2	Quantitative	Lending	Structural/ Relational	Trust, network	The relationship between two members	Lenders' propensity to lend	The relationship with borrowers and with other lenders who support the borrowers affects the funding intention of a potential lender.
(Colombo et al., 2015)	Internal	1,3	Quantitative	Reward	Relational	Obligation	Number of projects that the person had backed	Campaign success	Social capital affects campaign success by attracting more early backers and funding
(Ahlers et al., 2015)	External	3	Quantitative	Equity	Structural	Network	The share of non-executive directors on ventures' boards; LinkedIn friends	Funding success	The size of fundraiser' social networks can signal the quality of projects to investors, but the research finds a nonsignificant effect
(Kshetri, 2015)	External	3	Theoretical	All	Relational	Trust	NA.	NA.	A CF projects (all four types) are more likely to succeed in an economy with a high degree of trust in online transactions and in strangers.
(Davidson and Poor, 2015)	External	4	Quantitative	Reward	Structural	Network	The percentage of contributions from F&F and professional acquaintances based on survey	The willingness of fundraiser to use crowdfunding in the future	The more contributions from F&F, the less likely the fundraiser seeks crowdfunding in the future.

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Gleasure and Feller, 2016a)	Internal	2,4	Qualitative	Reward	Cognitive	Shared value	NA.	NA.	How shared value evolve over time: the dialogues among different groups lead to sharing appropriate value; and the anchor values bind projects and backer together.
(Gleasure and Feller, 2016b)	Internal	2	Conceptual	Donation	Relational	Reciprocity	NA.	NA.	Reciprocity is one of the rationalistic motivations of charity giving
(Agrawal et al., 2016)	Internal	1, 2	Conceptual	Equity	Relational	Trust	NA.	NA.	Backers' trust in lead investors (including that leaders' interests are fully aligned with their own and the leader can select, monitor, and support high-quality deals) affects their decision-making.
(Siering et al., 2016)	Internal	4	Quantitative	Reward	Relational	Communication	Linguistic and content-based cues	Default	Using machine learning, linguistic and content-based cues can predict the frauds of campaigns.
(Vismara, 2016)	External	3	Quantitative	Equity	Structural	Network	Number of LinkedIn friends	Funding success	The probability of campaign success increases with the size of the social network of fundraiser.
(Davidson and Poor, 2016)	Both	4	Quantitative	Reward	Structural	Network	Strong ties contribution: proxied by pledged-to-backers ratio. Weak ties: total number	The willingness to seek crowdfunding in the future	The higher pledged-to-backers ratio, the lower probability that the fundraiser tries a second campaign; the number of backers in the first campaign increase the likelihood of the fundraiser try a second campaign.
(Chen et al., 2016)	Internal	3	Quantitative	Lending	Structural/Relational	Network/trust	Affiliated group size, leader endorsement	Funding success, interest rate, default	Both structural and relational social capital enhance funding probability and reduce the interest rate and default rate.
(Cai et al., 2016)	Both	3	Quantitative	Lending	Relational	Trust	Verifications and previous successful loan requests	Funding success	The number of verifications is positively associated with the performance of campaigns launched by first-time borrowers. Previous successful campaigns have an insignificant effect on the performance of campaigns launched by repeat borrowers with lending experience.
(Burtch et al., 2016)	Internal	2	Quantitative	Reward	Relational	Social norms	Information concealment	Information concealment; pledge amount	The information concealment can be perceived as social norms and reduces followers' contribution.
(Kromidha and Robson, 2016)	Both	3	Quantitative	Reward	Relational	Communication/identity	Social networks: size of Facebook Friends; identity: number of sharing project webpage by backers in their Facebook page	Funding percentage, total amount	The degree to which backers identify themselves with the project is positively associated with funding percentage.
(Lukkarinen et al., 2016)	External	1,3	Quantitative	Equity	Structural	Network	Early contribution from private network; social media	Campaign success, number of backers, and amount of funding	Both the funding from private network and the existence of social media are positively associated with campaign success.
(Mendes-Da-Silva et al., 2016)	External	3	Quantitative	Reward	Structural	Network	Proxied by geographic distance	Amount of each pledge	The negative association between fundraiser-backer distance and

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Zheng et al., 2016)	Internal	3	Quantitative	Reward	Relational	Trust	Previous campaigns, investments, and entrepreneur-sponsor interactions	Ratio of pledge over goal	amount of pledge may be caused by social networks. All facets are positively associated with funding performance
(Kim et al., 2016)	Internal	3	Quantitative	Donation/Reward	Relational	Communication	The use of language	Percentage funding	Claims with a higher frequency of differentiating language lead to better crowdfunding performance, while a higher frequency in accountability language dampens crowdfunding performance
(Kang et al., 2016)	Internal	2	Quantitative	Equity	Relational	Trust	Measured by survey	Investment intention	Trust (both calculus and relational) has a positive effect on an investors willingness to invest.
(Turi et al., 2017)	Internal	2	Theoretical	Lending/Equity	Relational	Trust	NA.	NA.	When the total outcome is maximum, investors completely trust entrepreneurs and entrepreneurs are willing to disclose all information, investors and entrepreneurs achieve the Pareto-optimal.
(Greenberg and Mollick, 2017)	External	2	Quantitative	Reward	Relational	Identity	Survey on perceived gender identity; proportion of female fundraisers	Investment intention	Female investors tend to support female fundraisers in industries where women are underrepresented.
(André et al., 2017)	Internal	3	Quantitative	Reward	Relational	reciprocity	Pledge is higher than the reward	Campaign success, percentage of funding	The higher proportion of reciprocal giving, the more likely the campaign will succeed.
(Zhao et al., 2017)	Both	2	Quantitative	Reward	Relational/Cognitive	Trust/ commitment/ shared value/ communication	Survey	Funding intention	Communication and shared value positively affect backers' trust, trust positive affects commitments, and commitments contribute to funding intention.
(Bao and Huang, 2017)	Both	3	Quantitative	Reward	Structural/Relational	Network/ obligation	Network: number of Facebook friends. Obligation: Number of projects backed by an entrepreneur.	The ratio of pledge over goal	Social networks and obligations have a positive effect on campaign success.
(Roma et al., 2017)	External	4	Quantitative	Reward	Structural	Network	The number of LinkedIn contacts	Subsequent Professional Funding	Fundraisers' social networks can enhance the positive effect of pledges amount and subsequent professional investments.
(Cahalane, 2017)	Both	2	Qualitative	Reward	Structural	Network	NA.	NA.	The backers include F&F, fans, and those want to establish social connections with the fundraisers.
(Riggins and Weber, 2017)	External	3	Quantitative	Lending	Relational	Identity	Group identity (tech, agricultural, and gender)	Lending to certain group (tech, agricultural, and the same gender)	Lenders tend to support borrowers with the same background (tech, agricultural, and gender).
(Feller et al., 2017)	Both	3,4	Quantitative	Lending	Relational	Identity	Hard and soft information	Funding percentage, default	Some hard information is positively while some soft information is negatively associated with funding performance.
(Parhankangas and Renko, 2017)	Internal	3	quantitative	Reward	Relational	Communication	Concrete language, Precise language, Interactive style,	Funding success	

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Allison et al., 2017)	Internal	3	Quantitative	Reward	Relational	Identification	language low in psychological distancing Using "we" instead of "I"	Campaign success	Concrete language and interactive style are positively associated with funding success. Group identity can promote the campaign success through a peripheral route.
(Ge et al., 2017)	External	1,2	Quantitative	Lending	Structural/ Relational	Network/ trust	Disclosing social media account; the number of Weibo friends and fans	Default	Disclosing social media has a negative effect on the default probability. The number of fans, friends, and followers are negatively associated with the default probability.
(Kang et al., 2017)	Internal	2	Quantitative	Reward	Structural	Network	Number of Weibo followers of the project advocates on focal days	Daily funding amount	Social capital from the advocates can increase funding amount a few days later, and this relationship is enhanced by the sum of distance between fundraisers and advocates.
(Butticè et al., 2017)	Internal	3	Quantitative	Reward	Structural/ Relational	Network/ obligation/ trust	The number of comments from previous successful campaigns; the number of comments the entrepreneur had posted on the backed projects	Campaign success	Both internal social capital facets are positively associated with funding performance, and one facet can substitute others.
(Skirnevskiy et al., 2017)	Internal	4	Quantitative	Reward	Structural/ Relational	Network/ trust	Previous successful campaigns, Facebook shares	Campaign success	Internal social capital is positively associated with campaign success and early contributions.
(Quero et al., 2017)	Internal	2	Qualitative	Reward	Structural	Network	NA.	NA.	Networks as an ecosystem contribute to the value co-creation in crowdfunding.
(Kim et al., 2017)	Both	3	Quantitative	Reward	Relational	Communication/ trust	Trust: identity disclosure, previous experience; communications: updates & comments	Amount funded over funding goal	Both facets are positively associated with funding performance.
(Johnson et al., 2018)	External	2	Quantitative	Reward	Relational	Trust	Survey in experimental designs	Funding intention	Female fundraisers are more likely to succeed because they are more trustworthy than men.
(Xu and Chau, 2018)	Internal	3	Quantitative	Lending	Relational	Trust/ communication	The number of comments and response; the content of comments.	Funding success; interest rate; time to default	The number of comments, perceived accuracy and timeliness of response are positively associated with funding performance.
(Di Pietro et al., 2018)	Internal	4	Qualitative	Equity	Structural	Network	NA.	NA.	Start-ups that exploiting crowd network are more likely to be successful (survival and subsequent investments) two years later
(Bushong et al., 2018)	Internal	3	Qualitative	Donation	Relational	Communication	NA.	NA.	The social media used in conjunction with the web and well-established email communications formed the basis of successful project promotion.
(Nielsen, 2018)	Internal	2	Conceptual	All	Structural	Network	NA.	NA.	Crowdfunding functions as a network, which leads to collective actions.
(Dorfleitner et al., 2018)	Internal	2	Qualitative	Equity	Relational			Communication	

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Liu et al., 2018)	Internal	2	Quantitative	Donation	Relational	Trust	Whether the firms post updates, type of the updates on a given day. Several linguistic and content cues. Survey	Funding intention	Fundraisers tent to communicate with backers during the campaign rather after. Trust in the project is positively associated with backers' donation intention.
(Hong et al., 2018)	Internal	2	Quantitative	Reward	Structural	Network	Network embeddedness measured by backers' Twitter post linked to the campaign.	Daily funding amount	Network embeddedness positively moderates the relationship between Twitter activities and daily funding next day.
(Lagazio and Querci, 2018)	Internal	3	Quantitative	Reward	Relational	Communication/identity	Identity: number of Facebook shares. Communication: whether there are updates and comments	Funding success	Both facets are positively associated with funding success.
(Borst et al., 2018)	Both	2,3	Quantitative	Reward	Structural/Relational	Network/communication	Communication: lagged number of project updates, Facebook posts, and tweets. Tie strength: relationship with fundraisers through interviews.	Daily funding amount	The number of lagged updates has a positive effect on campaign performance. Only tweet message has a positive effect on campaign success and negative moderating effect on the relationship between weak (and latent) ties and funding performance.
(Kshetri, 2018)	External	2	Qualitative	Equity	Relational	Trust	NA.	NA.	Trust in strangers and in online transaction is positively associated with investors' funding intention.
(Vismara, 2018)	Internal	1,2	Quantitative	Equity	Structural	Network	NA.	Funding success	One explanation why public investor is associated with the number of early backers is word-of-mouth among networks.
(Crosetto and Regner, 2018)	Both	2	Quantitative	Reward	Relational	Communication	The number of videos and with a blog	Funding success	The communication efforts are positively associated with early contribution, and funding success only for projects which do not collect enough early contributions.
(Medina-Molina et al., 2019)	Internal	2	Quantitative	Reward	Structural	Bridging social capital	# Survey on the attitude towards new ideas and people think differently	NA.	People who participant in crowdfunding are less likely to contact people who think differently.
(Giudici et al., 2018)	External	2	Quantitative	Reward	Relational	Social norms/regional rational social capital	Voter turnout, recycling, the number of non-profit organizations, and satisfaction with friends	Funding percentage	Social capital can enhance the positive effect of local altruism on funding performance.
(Davies and Giovannetti, 2018)	Both	3,4	Quantitative	Reward	Structural/Relational	Network/reciprocity/ trust	The number of Facebook friends; previous backing amount; # previous funding experience	Funding success	All facets of social capital are positively associated with funding success.
(Zheng et al., 2018)	Internal	4	Quantitative	Reward	Structural/Relational	Communication/networks	Survey	Commitment to the project	The relationship between fundraisers and backers is positively associated with the backers' psychological ownership.
(Caldieraro et al., 2018)	Internal	3,4	Theoretical; qualitative	Lending	Relational	Communication	Length of the campaign description.	Campaign success and default	Both the missing loan description and the length of description are positively associated with

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Mamonov and Malaga, 2018)	Internal	3	Quantitative	Equity	Relational	Communication	Whether has a video	Funding success	campaign performance in lending crowdfunding. Whether project has a video has a nonsignificant effect on funding success.
(Jancenelle and Javalgi, 2018)	Internal	3	Quantitative	Lending	Relational	Reciprocity	Through text cues such as justifi* and reciproc*.	Funding time	The cues about reciprocity is positively associated with short funding period.
(Estrin et al., 2018)	Internal	2	Qualitative	Equity	Structural/ Relational	Network/ communication	NA.	NA.	Building professional networks is one of motivations to choose equity crowdfunding. Communications among investors and the ability to communicate with the entrepreneurs are important factors in the investment decision-making process.
(Anglin et al., 2018)	Internal	3	Quantitative	Reward	Relational	Trust	Endorsement; # of backing projects	Funding success, funding amount	Social capital cannot moderate the relationship between positive language and funding performance.
(Chen et al., 2018)	Internal	3	Quantitative	Lending	Relational	Trust	# of punctuations	Funding success, interest rate	The more punctuations used in loan descriptions, the less trustworthy the borrower would be, and less likely the loan will be granted (lower interest rates).
(Polzin et al., 2018)	External	2	Quantitative	All	Structural	Network	Survey on the relationship between fundraisers and backers	Use of information	The strength of network ties affects backers' use of information.
(Xu, 2018)	Internal	3	Quantitative	Donation	Relational	Communication	# of videos and images	Total amount, average amount	The number of videos has a positive effect on both total and average amount of investments.
(Dai et al., 2018)	Both	1,2,3	Quantitative	Reward	Relational	Trust	# Campaign related and non-campaign related Facebook shares	Success probability, campaign success	Only non-campaign related Facebook shares before campaign and campaign related Facebook shares during the campaign are positively associated with funding success.
(N. Wang et al., 2018)	Internal	3	Quantitative	Reward	Relational	Communication	Comment: number, length, and sentiment; reply: ratio, length, and speed.	Campaign success	Comment number and reply length and speed are positively associated with campaign success. The relationship is moderated by comment sentiment.
(Bitterl and Schreier, 2018)	Internal	4	Quantitative, experiment	Reward	Relational	Identification	Survey	Subsequent consumer supports	Participants have higher identification to a firm if they are involved in a crowdfunding campaign rather than simply buying the product upfront (pre-sell model). Such identifications lead to consumptions in the future.
(Block et al., 2018)	Internal	2	Quantitative	Equity	Relational	Communication	The number of updates on a given day	The number and amount of pledges on a given day	The updates have a positive effect on lagged pledges; this effect is positively moderated by the ease of language. Content matters:

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Simon et al., 2019)	Internal	3	quantitative	Donation	Structural/Relational	Network/ trust/ obligation	Survey on the strength of network ties and obligation; trust is manipulated by whether use academic titles, e.g. Dr. and Professor;	Funding intention	about campaign development, business developments, new funding, and cooperation projects; rather than start-up team, business model, product developments, and campaign promotions. Strength of network ties with referrals has a positive effect funding intention, while obligation has a mediating effect in this relationship. The impact of trust is nonsignificant.
(Z. Wang et al., 2019)	Internal	3	quantitative	Reward	Relational	Communication	The proportion, speed and content length of the entrepreneurs' responses	Funding percentage; funding success	Communication is positively associated with campaign success.
(Du et al., 2019)	Internal	3	quantitative	Lending	Relational	Communication	WeChat communication index	# of users	WeChat communication index is positively associated with the increase of users of the platform.
(Madrazo-Lemarroy et al., 2019)	Internal	3	Quantitative	Reward	Structural/Relational/Cognitive	Network/ relational/ cognitive	Structural: Facebook likes, Facebook (or Twitter) comments, Facebook shares; cognitive: text, number of words, adjectives or qualifiers, sentences or sequences of words; number of images; relational: comments & updates, reciprocity (backing projects)	Funding success	All three dimensions contribute to funding success
(Gafni et al., 2019)	Internal	3	Quantitative	Reward	Relational	Trust	The number of self-mentions	Funding success, percentage, and number of backers	The positive relationship between self-mentions and funding success is mediated by trust.
(Li and Martin, 2019)	Both	3	quantitative	Reward	Structural/Relational	Network/obligation	# of Facebook friends and backed projects	Funding success and speed	Fundraisers' social capital positively affects campaign success, but is not significantly related to funding speed.
(Bagheri et al., 2019)	Internal	2	Qualitative	Donation	Relational/Cognitive	Shared value/ trust	NA.	NA.	Shared value and trust in friends and famous people invest in the project are one the motivations why people contribute.
(Ingram Bogusz et al., 2019)	Internal	4	Qualitative	Donation/Reward	Structural/Relational	Trust/social networks	NA.	NA.	The platform failed to provide fundraisers access to networks; only short-term relationship can be developed; trustworthiness of platform is important for platform adoption.
(Hervé et al., 2019)	Internal	2	Quantitative	Equity/Lending	Structural	Network	# of minutes per day a person spends in social interactions in the location	Investment amount by a given investors in a given campaign	Investors living in more sociable areas tend to invest significantly more.
(Yin et al., 2019)	Internal	3	Quantitative	Reward	Relational	Communication	The number of updates & comments	Funding percentage	Communication is positively associated with funding performance.
(Presenza et al., 2019)	Internal	4	Qualitative	Donation	Structural	Network	NA.	NA.	The platform enables a better structure of the network to harness creative individuals to co-create value and deliver it to market.

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(T. Wang et al., 2019)	Both	2	quantitative	Donation	Structural/ Relational	Social identity/ communication/ network	Surveys	Funding intention	Communication and social networks enhance the social identity of backers, thereby increasing their funding intention.
(Wehnert et al., 2019)	Internal	4	Quantitative	Reward	Relational	Trust	Survey on trust in product quality, fairness, brand etc.	Funding success increases consumers' trust in the project.	Work-related word in updates and being certified are positive associated with the donation per month
(Mejia et al., 2019)	Internal	2	quantitative	Donation	Relational	Trust	# of updates during time period t; whether the campaign is charity verified.	The donation amount of project i during time t.	The paper weakly supports that social norms positively affect sharing intention
(Shneor and Munim, 2019)	External	2	quantitative	Reward	Relational	Social norm	Survey	Funding intention; sharing intention	A campaign video can enhance the probability of getting a loan, and reduce the interest rate. It is even more important for low creditworthiness borrowers.
(H. Wang et al., 2019)	Internal	3	quantitative	Lending	Relational	Trust	Whether has a video	Funding success, interest rate	Communication is positively associated with funding performance, but trust is not significant.
(Schäfer et al., 2018)	Both	3	quantitative	Donation	Relational	Trust/ communication	Trust: third-party endorsement; the existence of one-way or two-way feedback mechanisms	Funding percentage	Network and reciprocity are positively associated with both involvements; identification positively affects backers' involvement as an information source; shared language positive affects backers' involvement as a co-developer; other relationships are nonsignificant.
(Eiteneyer et al., 2019)	Internal	4	quantitative	Reward	Structural/ Relational/ Cognitive	Network/ trust/ reciprocity/ identification/ shared language, shared vision	Survey	Backer involvement as an information source and as co-developers	Networks matter in all stages.
(Brown et al., 2019)	Both	1,2,4	qualitative study	Equity	Structural	Network	NA.	NA.	Greater size of social networks can attract more backers, and the effect is greater after the campaign reaches the goal: maybe caused by weak ties.
(Foster, 2019)	External	2	mathematic/ quantitative	Reward	Structural	Weak ties	# of Facebook friends	# of backers of project i at a given time t	Trust enhance the attitude towards projects, thereby increasing funding intention
(Strohmaier et al., 2019)	Internal	2	Quantitative	Reward	Relational	Trust	Survey on trust in borrowers and in platform	Funding intention	Networks function as an ecosystem, thereby contributing to the value co-creation.
(Quero and Ventura, 2019)	Internal	2	Conceptual, Qualitative	Reward	Structural	Network	NA.	NA.	Whether the campaign has a video, the duration of the video, and visual variation are positively associated with funding success.
(Li et al., 2019)	Internal	3	quantitative	Lending	Relational	Communication	Whether has a video; duration, visual variation	Funding success	Shared value enhances the trust in project fundraisers, and trust is positive associated with funding intention.
(Liang et al., 2019)	Both	2	Quantitative	Reward	Relational/ Cognitive	Trust/ shared value	Surveys	Funding intention	Active backers have a positive association with product commercialization but negative
(Butticè and Noonan, 2020)	Internal	4	quantitative	Reward	Structural/ Relational	Obligation/ network	Active backers	Product commercialization; product quality	

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Article	SCType	Stage	Research design	CF type	SC dimension	SC facet	SC measurement	Dependent variable	Result
(Xiao, 2019)	Internal	1,2	Qualitative	Equity	Relational	Trust	NA.	NA.	relationship with product quality for novice crowd funders. Lead investors' behaviours are driven by both competence and relational trust in entrepreneurship. Followers are also driven by the trust in leaders. Stronger social networks between regionals lead to greater transaction flows.
(Dejean, 2020)	External	3	quantitative	Reward	Structural	Network	# of people living in one region but born in the other	Flow volume	Trustee endorsement, non-profit type, experience, proximity, and # of words are positively associated the funding success.
(Dorfleitner et al., 2019)	Internal	3,4	quantitative	Lending	Relational	Trust	Trustee endorsement (trustee's type, experience, trustee's proximity), # of words, whether mentions entrepreneurship plan, and education background	Funding success, reversed funding time, cox survival time	Trustee endorsement, non-profit type, experience, proximity, and # of words are positively associated the funding success.
(Li and Wang, 2019)	Internal	2	quantitative	Reward	Structural	Network	NA.	# of Facebook shares	Investors are more likely to share the project on Facebook before the threshold.
(Oo et al., 2019)	External	3	quantitative	Reward	Relational	Social identity	Identity: proxied by survey on perceived need similarity;	Funding success	The positive relationship between user entrepreneurship and funding success is mediated by the need similarity.

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