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# How do investors decide? An interdisciplinary review of decision-making in crowdfunding

Andreas Hoegen<sup>1</sup>  · Dennis M. Steininger<sup>1</sup>  · Daniel Veit<sup>1</sup> 

**Abstract** Crowdfunding is on the rise: its volume grew 1000% in only three years and is about to outpace worldwide venture capital spending. A quickly growing body of research is exploring the emerging crowdfunding phenomenon. While the literature offers a detailed and comprehensive picture of decision-making for traditional startup financing or bank loans, it does not provide a holistic understanding of decisions to invest in crowdfunded ventures. Many individual studies investigate isolated factors that influence investor decision-making in crowdfunding campaigns without integrating the findings regarding those influences. A comprehensive view of the relevant decision-making factors is necessary to build future research on and for practitioners to gain a better understanding of how investors choose. We conduct an interdisciplinary literature review to examine which factors influence the investment decisions in crowdfunding. From an analysis of 68 articles, we construct a comprehensive framework of relevant influence factors. Even though prior research covers many factors, others have received scant attention. Especially investors' cognitive features and the context in which the investment decision is made seem to strongly influence decisions but are scarcely researched. In addition, most reviewed studies focus more on individual factors and campaign success than underlying decision

processes. To highlight novel factors of crowdfunding investment decisions, we compare decision-making in traditional investments, such as venture capital and bank loans, to crowdfunding. Our findings offer new avenues for research toward understanding how the shift induced by crowdfunding changes our choices and actions. The analysis should support the endeavor to build better theories and provide a basis for further social and technological development.

**Keywords** Crowdfunding · Investment · Decision-making · Literature review

**JEL Classification** M15

## Introduction

Crowdfunding, a quickly expanding phenomenon that emerged about a decade ago, is an alternative way to finance ventures or individuals through online platforms collecting funds from a relatively large group of investors (Mollick 2014). The idea to draw funds from an anonymous crowd via the internet originated with small loans in developing countries (Agrawal et al. 2011; Khavul 2010). Today, this approach increases competition for traditional financing agents such as venture capitalists (VCs), business angels (BAs),<sup>1</sup> and banks (Khavul et al. 2013; Steinberg 2012), and

<sup>1</sup> Venture capitalists and business angels both provide capital to young startups in exchange for shares of the venture. They are a major foundation of venture financing taking high risks and, in turn, demanding a larger share of the profit in case of success (Mason and Stark 2004). Business angels are usually wealthy and knowledgeable individuals, often founders themselves that provide money in early seed stages and also bring their experience, contacts, and close involvement to the table (Brettel 2003; Mason and Stark 2004). VCs are often organized more institutionalized, e.g., in funds, invest in larger scale, and usually enter in a later and less risky (growth-)stage, providing more capital but less personal involvement than BAs (Mason and Harrison 2002).

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provides new opportunities for individuals and entrepreneurs in need of financing (Bruton et al. 2015). The global funding volume was over \$34 billion in 2015 and grew more than 1000% in three years, with the volume projected to surpass worldwide VC spending in 2016 (Massolution 2015).

Low entry barriers stimulate this growth: in contrast to highly regulated traditional financing markets, the digital channels of crowdfunding platforms are open to almost anyone with an internet connection (Bruton et al. 2015).<sup>2</sup> Especially in times of low interest on savings and turbulent stock markets (EIOPA 2015), alternative investments such as crowdfunding become increasingly interesting to private investors.

The body of research on the young crowdfunding phenomenon is quickly expanding. Many articles cover drivers of crowdfunding success and investigate which factors influence investor decision-making in crowdfunding. Predominantly, research deep dives on a very limited set of influencing factors, excluding the multitude of other aspects that might impact investor decisions. These factors, for example, include financial aspects such as funding targets of a campaign (e.g., Frydrych et al. 2014), investment behavior of others (e.g., Liu et al. 2015), or even physical appearance such as perceived attractiveness or skin color of the founders (e.g., Gonzalez and Loureiro 2014). In addition, most of the existing studies are limited to one type of crowdfunding (e.g., peer-to-peer lending or reward-based crowdfunding) and do not consider differences between the types. As important as insights into each influencing factor are, extant research does not provide an integrated view of what influences crowdfunding investment decisions. Such an integrated view can provide a synthesis of existing knowledge and expose potential theoretical foundations, allowing to build better theories. Thus, creating the necessary structure as a basis for future research to build on (Webster and Watson 2002). This is especially relevant, as crowdfunding is interdisciplinary at its core. Therefore, a stable basis for future investigations needs to bridge the gaps between disciplines and integrate extant findings. The few existing literature reviews in crowdfunding have neither particularly focused on investor decision-making nor looked at decision-making for all types of crowdfunding. They are either tailored to very narrow aspects, e.g., only listing selected determinants of success in peer-to-peer lending without any further discussion (e.g., Bachmann et al. 2011) and thereby cannot provide a holistic baseline to build future research on, or they look at crowdfunding from a much wider angle, only very briefly – if at all – touching on investor decisions (e.g., Moritz and Block 2016). Some researchers use shorter literature reviews as the theoretical foundation for their primary research (Okoli and Schabram 2010). To the best of our

knowledge, extant research does not provide the integrated and comprehensive overview of all factors impacting investor decision-making on digital crowdfunding platforms that will support to better understand what influences investors' choice from a holistic viewpoint.

It is also important to understand the differences between investor decision-making in crowdfunding and traditional finance, such as venture capital, business angel investments, or bank loans. Crowdfunding is beginning to compliment, and partially replace, these traditional channels. Crowdfunding investment decisions share many of the characteristics of decisions in VC funding or bank loans (Hall and Hofer 1993), and decision-making in traditional finance is well researched. But, as entry barriers drop, most crowdfunding investors are not professionals but amateurs, and the use of information technology as a mediator also impacts behavior (Mollick and Nanda 2015). This leads to systematic deviations in decisions between these traditional channels and emerging crowdfunding (Mollick 2014). Better understanding these deviations will allow crowdfunding researchers to also build on findings from traditional finance while being aware of the differences. The need for a more systematic understanding of decision-making criteria for crowdfunding investments, and the differences between the crowd and professional investors has also been highlighted by previous research (Moritz and Block 2016).

A more comprehensive understanding of how investment decisions in crowdfunding settings are made, and how they differ from traditional settings, will also help crowdfunding platforms evolve, e.g., by allowing them to tailor their platform design and information presentation to the needs of the investors. It will also help founders to improve their success rates by providing all relevant information to potential investors and improve their impression management and communication. In addition, a better understanding will help investors in making better investment decisions by creating awareness of which factors they should consider and how their judgement might be subconsciously influenced. Further, it will provide new perspectives on regulating investments on such platforms, helping to protect investors from rash and potentially costly choices.

Therefore, the research questions we address are: *Which factors influence investor decision-making in crowdfunding? How does decision-making in crowdfunding differ from traditional financing decisions?*

In this paper, we conduct an interdisciplinary review of crowdfunding decision-making research, emphasizing studied factors and applied methodologies to expose gaps and possible avenues for future investigation. The result is an integrated framework of criteria influencing investor decision-making in crowdfunding and a systematic comparison of decisions in crowdfunding with those in traditional settings.

<sup>2</sup> Current regulation of equity crowdfunding varies by country and regulation is ongoing in many geographies (Borello et al. 2015; Cumming and Johan 2013; Levin et al. 2013).

## Background

### Crowdfunding

First coined in 2006 (Sullivan 2006), the term crowdfunding describes “the efforts by entrepreneurial individuals and groups ... to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the Internet, without standard financial intermediaries” (Mollick 2014, p. 2).

The phenomenon emerged in the late 1990s, when the British band Marillion collected US\$60,000 via the internet to finance a tour (Preston 2014). Around the same time, charities started raising donations through online communities (Ordanini et al. 2011). In 2005, *Kiva* launched as the first platform for microloans in developing countries (Kiva.org 2016). In the following two years, *Zopa* and *Prosper* emerged as platforms that allowed everyone lending money to others through the internet (peer-to-peer lending) in developed countries, providing an alternative to bank loans (Hulme and Wright 2006). In 2008 and 2009, *Indigogo* and *Kickstarter* enabled ventures to raise money in exchange for rewards. As a next evolutionary step, ventures started offering equity stakes to the crowd, for example through *GrowthVC* in 2010 and *Crowdcube* in 2011 (Ahlers et al. 2015).

Together with the spread of internet technology, the worldwide financial crisis in 2008 became a catalyst for alternative models of funding (Christensen 2013; Harrison 2013). Traditional sources focused on later-stage investments or cut back their spending altogether, leaving room for crowdfunding (Evans and Jovanovic 1989; Ley and Weaven 2011). Even when institutional investors are available, a crowdfunding campaign is usually much quicker than going through the VC vetting process (Beaulieu et al. 2015).

De Buysere et al. (2012) categorize crowdfunding into reward-based, equity-based, donation-based, and lending- or debt-based funding. *Reward-based crowdfunding* offers investors non-monetary compensation for their support, ranging from a token of appreciation (e.g., a handwritten note or an invitation to a founders’<sup>3</sup> dinner) to basic pre-ordering of the funded product at a discounted price (Gerber et al. 2012; Mollick 2014). In *equity-based crowdfunding*, investors receive equity (or royalties) in a company (Beaulieu et al. 2015). This model is closest to classical financing through BAs or VCs (Belleflamme et al. 2014; Mollick 2014; Ordanini et al. 2011). *Donation-*

*based crowdfunding* offers no specific rewards to the backer, appealing to altruistic motives. It uses crowdfunding as a different channel to collect money for “the social good” (Burtch et al. 2013b). Because of its altruistic nature, this type of crowdfunding is rarely a substitute for professional financing of start-ups. *Lending-based* crowdfunding is used to loan money that is repaid (usually) plus interest. Beaulieu et al. (2015) further distinguish between *peer-to-peer lending* and *microfinancing*. The latter focuses on very small loans, which support small projects mostly in underdeveloped countries. Not all platforms fall into these hard-cut categories, as some allow mixed models, such as offering rewards along with equity (e.g., *Companisto.com* 2016).

### Decision-making in crowdfunding

On their way to pledging money to a venture, investors have to find an interesting opportunity on one of many platforms, collect and analyze investment-relevant information, and ultimately decide whether and how much to invest. During this process, investors face high levels of information asymmetries in favor of the founders (Ley and Weaven 2011) as well as uncertainty as to how the venture will develop (Ahlers et al. 2015).

Almost all founders provide information to potential investors. But only few of the presented facts are validated by the crowdfunding platform or another third party. Some platforms check basic financial information like credit score, personal income (Iyer et al. 2015), or business plans (Mollick and Robb 2016). But most information is unverified, if not unverifiable. The information can take the form of seemingly hard facts, such as revenue figures, project progress, monthly disposable income for payback, or soft disclosures such as promises or self-descriptions (Michels 2012). Therefore, the relationship between founder and investor is characterized by high levels of information asymmetries (Ahlers et al. 2015). When investors try to balance potential reward and risks, these asymmetries create classical agency constellations (Ley and Weaven 2011). In the principal-agent relationship the founder (acting as the ‘agent’) seeks funding from the investor (acting as the ‘principal’) and tries to signal his eligibility and intentions (Arthurs and Busenitz 2003; Sahlman 1990). The investor has to trust the signals and the best intention of the founder (Norton 1995).

Like other investments, crowdfunding investments are usually decisions under uncertainty: investors can’t predict future development of a business or solvency of a borrower (compare Akerlof 1970). With scant viable information, investors use proxies and other modes of evaluation to make their decisions (Moritz et al. 2015). Therefore, each available piece of information is evaluated and every way of

<sup>3</sup> For simplicity, we refer to founding entrepreneurs, borrowers, fundraisers and everyone else requesting funding in a crowdfunding campaign as “founders” (for similar use see Beaulieu et al. 2015). We title everyone giving money to the founder “investors.”



signaling by the founder is interpreted (Prystav 2016). For example, information sources such as social dynamics (Liu et al. 2015), emotional reaction (Genevsky and Knutson 2015), or even seemingly irrelevant factors such as skin color (Pope and Sydnor 2011) are taken into account. Besides the information itself, contextual cues influence decisions, e.g., how information is presented or perceived (Thaler and Sunstein 2008). Consequentially, a human investor considers factors that a purely rational investor, a ‘homo economicus’ (Mill 1844), would ignore (Thaler 2000).

Earlier reviews investigated partial aspects also related to investor decision-making in crowdfunding but never specifically focused on decision-making in its entirety and for the different types of crowdfunding. For example, Bachmann et al. (2011) conducted a review of lending-based crowdfunding only. As part of their article, they briefly touched on determinants of success in online lending - financial information, demographics and social aspects - and listed some of the factors discussed in prior research. Chen and Han (2012) compared peer-to-peer lending between the US and China and reviewed a small number of articles for this comparison. They also listed some of the factors influencing investment decisions on a high level, e.g., differentiation between harder factors, such as financial information, and softer factors, such as ‘herding’ behavior. Both reviews are very brief, especially in their consideration of decision-making. Beyond listing a few factors that influence decisions, neither does provide a wider overview or systematic analysis of influencing factors in any way. In addition, both reviews only consider peer-to-peer lending, therefore severely limiting insights for any other type of crowdfunding. Moritz et al. (2015) provide a brief overview of the literature on communication between founders, investors, and third parties as foundation for their own qualitative study. Like other extant efforts to review the literature, they focus on narrow aspects of decision-making and only briefly list some previous findings. They also focus on one type of crowdfunding (equity-based crowdfunding). Other crowdfunding reviews discuss the phenomenon as a whole, looking at aspects such as development crowdfunding, regulatory issues, or economic impact (e.g., Beaulieu et al. 2015; Belleflamme et al. 2013; Moritz and Block 2016). They do not, however, provide any systematic consideration of decision-making.

### Traditional financing decision-making

Decisions in the different types of crowdfunding correspond to decisions in traditional financial investments. Reward-based crowdfunding investment behavior is similar to an online purchase, or pre-ordering without guaranteed delivery and with the risk of losing the invested

money. VCs and BAs have been making equity-investment decisions for decades, people continuously donate to charity, and banks have been granting loans for centuries. To allow for a comparison after the analysis of crowdfunding decision-making, we briefly introduce each traditional counterpart.

**(Online) purchase decisions** Finding a perfect traditional equivalent to reward-based crowdfunding is difficult. The closest equivalent would be pre-ordering of products in development for a discounted price without any guarantee of delivery and without refunds in case of failure to deliver. While this very special type of shopping experience is rare, and therefore hardly considered in the literature, general online shopping and purchase decision-making are well researched from many angles. The decision to purchase something usually depends on the individual characteristics of the buyer, environmental and social influences, the characteristics of a product or service, and often the characteristics of the merchant or intermediary (Cheung et al. 2005; Engel et al. 1995). For online purchases, the characteristics of the medium and the general online environment also influence the decision (Darley et al. 2010). Purchase intentions often depend on the characteristics of the buyer ranging from demographics (Bellman et al. 1999), over personality (Das et al. 2003), to attitude (Childers et al. 2002). Environmental influences mediate purchase decisions, e.g., through social norms (Hansen 2008) or word-of-mouth (Hennig-Thurau et al. 2004). The characteristics of a product itself are usually at the core of the decision, e.g., the high perceived quality (Tsiotsou 2006) and appropriate pricing (Olson 1976). The seller or merchant also plays a key role as major mediator and enabler of any transaction, e.g., providing brand loyalty (Gefen 2002) and high service quality. For online channels, finally, the characteristics of the medium and online environment change how buyers decide. A purchase becomes more likely if a platform or technology is, e.g., easy to use and convenient (Childers et al. 2002), and provides high security (Katawetawarakas and Cheng 2011). The importance of this multitude of factors varies strongly with the type of product, service, purchase, or the channel of the transaction (Cheung et al. 2005).

**Venture capital / business angel decisions** Reviews of how VCs and BAs make decisions when investing in startups unilaterally identify four groups of influencing factors: the product or service, the market, the entrepreneur or team, and the financials. Factors regarding product and service range from specific attributes of a product (Zacharakis and Meyer 1998) and differentiation from competing offers (Hall and Hofer 1993) to protectability and patents (MacMillan et al. 1985). The market a startup operates in is highly relevant in the funding decision as it determines the potential of a venture as well as risks and chances of an investment, for example

regarding its general attractiveness (Hall and Hofer 1993), size, growth (Maxwell et al. 2011), dynamics, or entry barriers (Zacharakis and Meyer 1998). The entrepreneur or team is usually at least as important as the business idea. BAs and VCs invest in capabilities, industry experience, track record, general personality, motivation, or the team composition (Hall and Hofer 1993; MacMillan et al. 1985). Finally, investors want to make a profit and therefore place much effort on due diligence regarding financial risks, including potential return on investment, cash flow, exit options, liquidity, or equity stakes (MacMillan et al. 1985; Maxwell et al. 2011). Some reviews list additional factors like the characteristics and requirements of the investment firm (Hall and Hofer 1993), the fit of investor and founder (Maxwell et al. 2011), and sometimes referrals or references (Maxwell et al. 2011; Zacharakis and Meyer 1998). Little research focuses on soft and cognitive factors like the role of intuition (Hisrich and Jankowicz 1990) or how images and colors of a business plan influence decisions (Chan and Park 2015).

**Traditional charity decisions** General motives for donating money range from support of a specific cause or recognition by peers to simply getting rid of the asker (Bruce 1994). The decision criteria vary depending on the motive (Hibbert and Horne 1996), but usually a prime factor is the personal conviction that a donated amount will help a specific “good cause.” Donations may be planned, with the decision based on the donor’s donation history, knowledge of and trust in the organization, and personal involvement with a specific cause and the donor’s demographics, such as gender (Cheung and Chan 2000). The donation can also be impulsive, for example when approached on the street. In this case, the immediate affective reaction, how information is presented to the donor, and the donor’s general impulse control are the major determinants (Bennett 2009). Especially how information is presented and affective reactions are subject to subconscious evaluation. Therefore, donation decisions are often only partly based on a conscious and factual evaluation (Dickert et al. 2011).

**Bank loan decisions** Traditionally, the “5 Cs” are used to evaluate an applicant’s eligibility to a loan: capacity, conditions, capital, collateral, and character (Beaulieu 1996; Bruns et al. 2008). Capacity describes the borrower’s ability to service the loan with regard to predicted cash flow. Conditions refer to environmental factors such as status and growth of the economy, interest rates or competition in the case of business loans. For business loans, the total available capital a company needs to fund its ventures is also considered in a lending decision. Collateral reduces the bank’s risk by providing secured assets or alternative sources to settle a loan. Finally, the character of the founder, management team, or individual

borrower, for example in terms of integrity and stability, is taken into consideration.

In general, banks mostly focus on economic factors, such as financials, risk, and return on investment. Important criteria for business loans are financial risk, economic situation, business assessment, and management quality (Krahn and Weber 2001; Weber et al. 2010). Personal loans are evaluated on the basis of the borrower’s financials, purpose of the loan, general indicators of stability (e.g., home ownership and job history), demographics and the personal character judgment of the loan agent (Malhotra and Malhotra 2003; Smith 1964). Before the advent of electronic support, the approval or decline of a loan application was mostly up to the loan agent’s subjective impression and decision (Altman and Saunders 1997). Over time, different decision frameworks, tools and systematic scorecards were introduced to bolster the officer’s subjective decisions. With the emergence of computers, simple scoring models grew into sophisticated algorithms. Today, applications for eligibility are evaluated partially by complex neural networks based on complicated algorithms not always transparent to the human decision-maker (Malhotra and Malhotra 2003; West 2000).

## Methodology

As introduced above, the objectives of our review are to develop an integrated and interdisciplinary framework of factors that influence investor decision-making in the crowdfunding context from existing studies (compare, e.g., Schwarz et al. 2007). To do so, we followed the major steps outlined in Table 1.

### Developing a review plan (1)

As introduced above, our review aims at understanding and visualizing decision-making and its influencing factors in crowdfunding. We selected an interpretive and conceptual review approach to address these aims. This type of review allows to identify, interpret, and aggregate the nomological network associated with decision-making in this context (Noblit and Hare 1988; Ortiz de Guinea and Paré 2017).

### Searching the literature (2)

Since the phenomenon of crowdfunding is rather young and spread across many different disciplines, we chose to not limit the scope to specific disciplines or outlets. Instead, we conducted a multidisciplinary full-text keyword search of all peer-reviewed journals in three databases: EBSCOhost, ProQuest, and ScienceDirect (selection adapted from Piccoli and Ives 2005; Smith et al. 2011). To consider more contemporary research in the field, we also included proceedings of the International Conference on Information Systems (ICIS).

**Table 1** Steps of the review approach (adapted from: Aksulu and Wade 2010; Ortiz de Guinea and Paré 2017; Paré et al. 2016)

Step	Description
1) Developing a review plan	We have outlined our objectives in the introduction above. Furthermore and based on these objectives, we have selected an interpretive conceptual review approach (Ortiz de Guinea and Paré 2017).
2) Searching the literature	To respond to the interdisciplinary nature of the phenomenon, we did not limit to specific outlets or disciplines but only to peer-reviewed articles. They were identified by using carefully crafted keywords for full-text searching the most comprehensive academic databases. The resulting articles are gathered in a longlist (Xiao et al. 2013).
3a) Selecting articles	The initial longlist is manually screened by two of the authors using our decision tree with criteria for inclusion and exclusion. Exclusion criteria are both of formal nature (e.g., practitioner publications) and with regards to content (e.g., without focus on investors' decisions or on the decision processes). Articles marked for inclusion at least by one of the reviewers are included in the shortlist (Dubé and Paré 2003; Xiao et al. 2013).
3b) Adding articles via forward and backward search	Forward and backward search (Webster and Watson 2002) is applied to the shortlisted articles to identify further ones. Results are then also treated as described in step 3a) and finally added to the shortlist, if matching. This amended shortlist builds our final sample for further review.
4) Extracting, synthesizing, and grouping of data	We start with a brief extraction of information from articles such as used methods, level of analysis, discipline, and type of crowdfunding. However, our main focus lies on extracting every decision-making and success factor mentioned in each article and abstracting the findings into a framework. We therefore used iterative and inductive Grounded Theory coding techniques as common in reviews (Aksulu and Wade 2010; Dubé and Paré 2003; Glaser and Strauss 1967; Wolfswinkel et al. 2013; Xiao et al. 2013). Coding was accompanied by continuous discussion amongst the coders to ensure stability of the emerging framework and resolve any potential issues (Strong and Volkoff 2010).

Keywords were *crowdfunding*, *crowdinvestment*, *crowdequity*, and *crowdlending*, controlling for different notation, spelling, and derivations of these terms, such as *crowdfunded*. As the term crowdfunding was not used before 2006, we included different variations and spellings of earlier and related phenomena, such as *peer-to-peer lending* and *microfinancing*. Using these keywords, we obtained 544 articles from EBSCOhost, 139 from ProQuest, 76 from ScienceDirect, and 21 ICIS papers, of which 142 hits were excluded as duplicates.

#### Selecting articles and adding articles via forward and backward search (3a + b)

We defined and continually refined a set of exclusion rules (Okoli and Schabram 2010), which we used to manually screen the title, abstract, and, where necessary, each article's full text for exclusion from further analysis. We excluded formally unsuited articles, such as those written in languages other than English, book reviews, editor commentaries, press releases, practitioner publications, or research-in-progress (Okoli and Schabram 2010). In the next step we screened for content, excluding articles that did not focus on investors'

decisions or decision processes, or (as a proxy for the investor's decision) research factors influencing campaign success.<sup>4</sup> After the manual filtering, 64 articles from various disciplines with a focus on investor decision-making or campaign success factors remained for analysis. During detailed examination of these remaining articles, we conducted a forward search using Web of Science, as well as backward searches using the defined exclusion rules (Webster and Watson 2002). Both approaches led to a total of four additional relevant sources. Hence, this step resulted in a final sample of 68 articles that were further reviewed, coded and analyzed.

<sup>4</sup> We use the terms "campaign success" to address different dependent variables (DV). Due to the heterogeneity of the analyzed research, different measures are used throughout the literature. The most frequently used DVs are funding success (dummy variable indicating if a campaign reached the desired funding goal), number of investors, total funds raised, investment decision of individual investors (dummy coded), or height of an individual's contribution. For lending-based campaigns a lower interest rate is also used as indicator for campaign success. All these DVs are also indicators for each funder's "funding decision", as referred to in later sections. It is common practice in IS literature reviews to cover a diverse set of dependent variables for a specific topic (Bélanger and Crossler 2011; Smith et al. 2011). See Appendix for an overview of the DVs in the reviewed articles.



### Extracting, synthesizing, and grouping of data - framework construction (4)

The main goal of our analysis was to discover and understand the underlying concepts and overarching themes of crowdfunding decision-making and organize them into an integrated framework. Our review analysis approach therefore was interpretive in nature, allowing us to interpret and build abstractions from our results (Noblit and Hare 1988). Interpretive review analyses “see the essential tasks of synthesis as involving both induction and interpretation. Their primary concern is with the development of concepts [and categories]” (Dixon-Woods et al. 2006, p. 2). We systematically analyzed the articles in a multi-step process (Glaser and Strauss 1967; Miles and Huberman 1984). Our approach was inductive in nature to ensure that descriptive codes, as well as interpreted categories and patterns, were based on the data and not being imposed ahead of data analysis, e.g., by theory (Aksulu and Wade 2010; Patton 1980). This stance and approach was chosen because it allows finding categories that build the nomological network surrounding decision-making in crowdfunding (Aksulu and Wade 2010; Glaser and Strauss 1967).

We began with a structured extraction of information from articles such as used methods, level of analysis, discipline, and type of crowdfunding as a foundation and then turned to our main inductive analysis. For this main analysis, we read each article in detail to extract decision-making factors in crowdfunding. We assigned a basic descriptive label to each factor (i.e., open coding) (Strauss and Corbin 1998). Further, we annotated additional aspects, e.g., which factors were researched together, and details about analytics and results where available (i.e., memoing) (Glaser and Strauss 1967). In this way we constructed and continuously enhanced our concept matrix (Webster and Watson 2002). After extracting all factors, we iteratively discussed and improved the collection of factors, annotations and codes, e.g., by expanding or merging factors, and resolving conflicts in case of different nomenclature or understanding. After entangling and removing overlapping constructs, our analysis resulted in a total of 74 labels for distinct influencing factors (i.e., interpretive coding) (Aksulu and Wade 2010; Strong and Volkoff 2010).

The next step focused on abstraction via recognizing patterns. Throughout our analysis patterns emerged and developed (Glaser and Strauss 1967) which we used to cluster factors and to build groups on a higher level of abstraction (i.e., pattern coding) (Aksulu and Wade 2010; Wolfswinkel et al. 2013). This was a highly iterative process in which we continuously discussed underlying concepts and reasoning for grouping factors. The grouping was also strongly based on how the analyzed papers grouped the factors, and which factors are researched together in individual or related articles. We repeated this process to reach a further level of abstraction

– aggregating the groups (referred to as sub-categories in this article) into higher-level categories (Aksulu and Wade 2010; Strauss and Corbin 1998). Grouping of categories was inspired and aligned with decision-making theory and extant literature in traditional finance to synchronize and adapt categories and labels as suggested by Strauss and Corbin (1998). Throughout the entire process, we continuously discussed and iterated the categories to ensure exhaustive coverage of all factors as well as mutually exclusive categories with minimal overlap and the same level of abstraction (Strong and Volkoff 2010; Wolfswinkel et al. 2013). Three independent reviewers were involved in this coding process (Aksulu and Wade 2010; Strong and Volkoff 2010).

## Results

We present our results in two parts. We first provide an overview of the current research in terms of the number and outlets of publications, types of crowdfunding investigated, and methodology used. We then derive a framework of decision-making factors from the analyzed articles. Based on this framework, we highlight the current state of research and discuss the importance of various decision-influencing factors.<sup>5</sup>

### Overview of current research

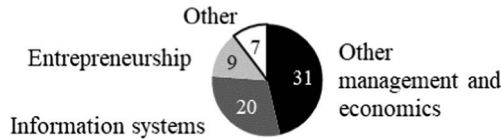
As crowdfunding has an impact on many disciplines, the 68 articles of this review originate in various fields such as IS, entrepreneurship, marketing, finance, economics, sociology, psychology, and humanities. Despite the diversity, almost 90% of the articles stem from IS, entrepreneurship, and other disciplines closely related to management and economics. But while psychological factors indisputably play a significant role in decision-making, only one study has its roots in psychology (Genevsky and Knutson 2015). Figure 1 provides an aggregated overview of the publications by discipline.<sup>6</sup>

To the best of our knowledge, crowdfunding was not systematically researched before 2010 (Greiner and Wang 2010). Since then, the number of studies has been increasing rapidly and is very likely to keep growing. As the oldest phenomenon, peer-to-peer lending has received the most research attention, closely followed by reward-based crowdfunding. Research on equity-based crowdfunding, the youngest type, is still in early stages, but is growing quickly (Fig. 2).

<sup>5</sup> As some studies cover several types of crowdfunding or different decision-making factors, the figures in the overview tables do not always add up to the 68 analyzed studies.

<sup>6</sup> “Other Management & Economics” includes any management discipline besides entrepreneurship and information systems (e.g., organization, marketing, or finance).

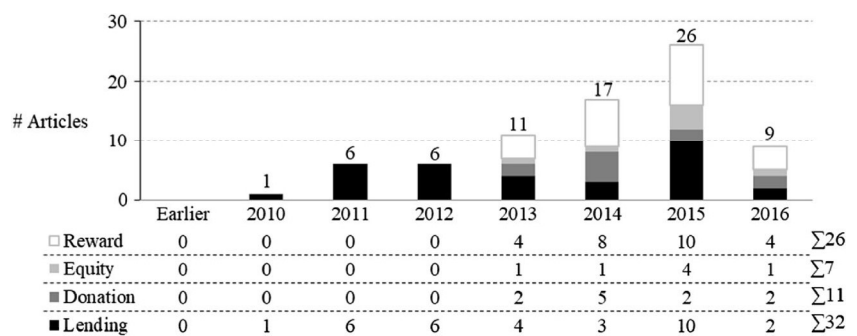




**Fig. 1** Number of publications by discipline (aggregated)

Almost all studies (over 86%) in this review use some form of secondary data. In most cases, secondary data include information about past campaigns, often scraped from the platforms' websites. As shown in Table 2, only a minority of studies use other methods such as surveys, case studies, or experiments, sometimes in addition to secondary data. Primary data are collected either through lab experiments on mock crowdfunding platforms (e.g., Gonzalez and Loureiro 2014), lab experiments with platform data of past campaigns (e.g., Prystav 2016), or field experiments through direct access to live platforms (e.g., Burtch et al. 2015). Independent of the source of data, the majority of articles applies quantitative methods. Most researchers use regressions and similar methods to reveal correlations between different influence factors and the funding success of a campaign. Some articles use qualitative or mixed-method approaches, and only a few articles investigate individual decision processes or reasons for investments (e.g., Agrawal et al. 2016; Moritz et al. 2015). In other cases, where articles do not specifically focus on the decision process, the funding success of a campaign serves as a proxy for the investors' decision. The most exotic approach may be that of Genevsky and Knutson (2015), who use functional magnetic resonance imaging (fMRI) to literally look inside their subjects' brains during the decision-making process.

**Fig. 2** Number of articles by crowdfunding type over time



**Table 2** Publications by used methodology (overlap possible, as some articles apply several methodologies)

Secondary data	Experiment	Case study and interview	Survey	Economic modeling	Review	Conceptual	Design
58	7	6	5	5	3	1	1

## Analysis of decision-making in crowdfunding

From our analysis, we inductively developed an integrated framework of decision-making in crowdfunding. This framework allows us to analyze the large number of influencing factors researched and mentioned in the literature and structure our findings. In addition, it guides the comparison of influencing factors between crowdfunding and traditional financing. Finally, it enables future discussion and research to build on a more abstract basis instead of handling a multitude of small factors on different levels of abstraction.

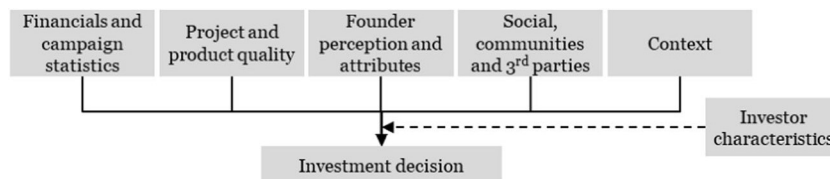
During the analysis of our data and concept matrix, six main categories of influencing factors emerged (Fig. 3). Each category contains two to five sub-categories (see Table 3 for details). In this section, we give an overview of the six categories, provide insights into the coverage of our framework by the analyzed literature, describe findings of the articles in detail, and provide an approximation of how important each category is to the investment decision.

### Crowdfunding decision-making framework and categories

**Benefits and quality** This category comprises the basic value proposition or promised benefit as well as the (perceived) quality of product, project and process.

**Financial risk and campaign statistics** This category includes the financial risk involved in an investment as well as information about the status and characteristics of the crowdfunding campaign. Most information in this category is easily measurable and comparable.

**Fig. 3** Crowdfunding decision-making framework



**Founder perception and attributes** All characteristics of the founders and how they are perceived by the investors are grouped in this category. It also includes the basis on which investors derive or judge those qualities, such as demographics or observable physical attributes (e.g., height, weight), previous behavior and ventures of the founder, or the way in which founders communicate with the investors.

**Social, relationships, and endorsements** Any kind of relationship with and behavior of third parties that potentially influences the investment decision is part of this category, including the social capital of the founders in terms of their social network or social status in their peer group. It also covers behavior of peers, such as funding choices of other investors, behavior of the investor's friends or of the known founders' friends. In addition, it captures endorsements of third parties in the form of reviews, recommendations, referrals, grants, or media coverage.

**Context** The context includes all attributes of the decision-making context that – by standards of a homo economicus (Mill 1844) – should not influence the investment decision. However, for non-homo economicus investors, it nonetheless has a measurable and often subconscious impact. Context could include, for example, features of the platform such as any information representation or presentation that does not change the information's content. The context also extends to the personal surroundings and situation of the decision maker.

**Investor characteristics** The last category has no direct impact on the investment decision. Rather, the characteristics of the investor influence how relevant or important other factors are to an investor's decision. Therefore, the characteristics work as a moderator in combination with the other categories to encompass everything about the investors and their attributes such as their personal preferences, motives, or involvement. It also includes their affective reaction to different kinds of stimuli and the investors' experience with this type of investment. In addition, it includes the relational fit with the founder, for example perceived similarities or differences, geographic or cultural proximity, or felt competition. Finally, the investors' cognitive features fall into this category, such as their need for cognition (Cacioppo and Petty 1982) or cognitive

heuristics they have learned over time (Gigerenzer and Goldstein 1996; Tversky and Kahneman 1974).

### Coverage of framework by analyzed articles

Not all categories of the framework are researched to the same extent (an overview of the number of articles per category and sub-category can be found in the Appendix). Financial factors, benefits, and process quality as well as the perception of the founders, their communication and behavior are well examined. The impact of social capital, social dynamics and third parties in general are also well covered by research to date. In contrast, few articles are devoted to the context of a decision or to the investor's cognitive characteristics and experience.

The extent to which each type of crowdfunding has been research becomes apparent when comparing lending- with equity-based crowdfunding. Depending on the type of crowdfunding, each decision-making category was studied more or less extensively. This might be an indicator of how important each category is for a crowdfunding type, but also point towards gaps in the extant literature. For example, research into lending-based crowdfunding strongly focuses on the perception and attributes of founders and the hard numbers of financial risk and campaign statistics. The characteristics of the investors as well as social behavior, on the other hand, are better researched for reward- and donation-based crowdfunding. Figure 4 gives an overview of the research by crowdfunding type and decision-making category. It especially shows the different extent of research for each combination of type and category.

### Description and summary of findings by category

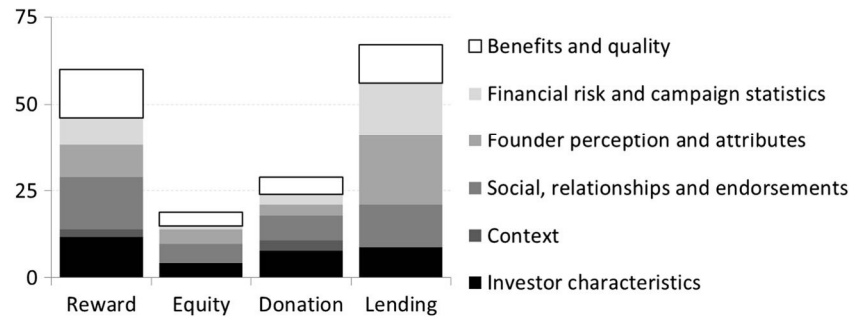
In the following, we highlight relevant findings from the reviewed articles for each category.

**Benefits and quality** The *outcome and product* encompasses everything – material and non-material – that is promised to the investor as a result of pledging money. In the case of donations the benefit is the cause the money supports, for reward-based crowdfunding it includes the prospective product or reward, for lending the promised interest is part of the benefit, and in the case of an equity investment the benefit is, for instance, a stake in the company, promised return on investment, or profitable exit options (Ahlers et al. 2015). Investors usually prefer material (e.g., physical products or money) to non-material (e.g., a good cause or thank you) benefits, if both are available (Belleflamme et al.

**Table 3** Overview of crowdfunding decision-making framework categories and sub-categories

Category	Sub-category	Description	Examples
Benefits and quality	Outcome and Product	<ul style="list-style-type: none"> <li>• Benefits promised to investor</li> <li>• Material or non-material</li> <li>• Perceived quality of the (produced) product or service</li> </ul>	Exit-option (Ahlers et al. 2015), Rol (Vulkan et al. 2016), interest (Dorfleimer et al. 2016), (non-)monetary rewards (Belleflamme et al. 2013), Product previews, product descriptions (Galuszka and Bystrov 2014)
	Perceived process quality	<ul style="list-style-type: none"> <li>• Transparency of future steps and plans</li> <li>• Adherence to communicated plans</li> <li>• Includes campaign / pitch quality</li> </ul>	Preparedness (Mollick 2014), available information (Prystav 2016), founder activity (Antonenko et al. 2014), media richness (Hörisch 2015), quality of pitch / campaign (Hobbs et al. 2016)
	Financial risk	<ul style="list-style-type: none"> <li>• Monetary risk of investment</li> <li>• Includes factors to judge or mitigate risk</li> <li>• Usually measurable and comparable data</li> </ul>	Credit grades and economic signals (e.g., home ownership) (Michels 2012), business plan (Moritz et al. 2015), fit of project needs (Ahlers et al. 2015)
	Campaign statistics	<ul style="list-style-type: none"> <li>• The campaigns statistics and status</li> <li>• Meta-data about the campaign (progress) as provided by the platform</li> </ul>	Funding goal, remaining budget (Vulkan et al. 2016), campaign duration, remaining time (Cordova et al. 2015)
Founder perception and attributes	Founder characteristics	<ul style="list-style-type: none"> <li>• Measurable and perceived characteristics of founder / team (e.g., trust, passion)</li> <li>• Skills, competence, experience, and team composition as necessary for project goals</li> <li>• Appearance, pedigree and performance</li> </ul>	Education or size of team (Ahlers et al. 2015), perceived neediness (Duarte et al. 2012), inferred personality attributes (e.g., passion, honesty) (Moritz et al. 2015)
	Founder communication	<ul style="list-style-type: none"> <li>• Communication behavior of founder(s)</li> <li>• Disclosures / claims of the founder(s)</li> <li>• Communication on all platforms (e.g., social network sites)</li> <li>• Previous (public) activity of founder(s)</li> </ul>	Extent of communication (Galuszka and Bystrov 2014), used language (Moss et al. 2015), (pseudo-)personal communication (Moritz et al. 2015), (unverified) claims (Herzenstein et al. 2011a; Yum et al. 2012)
	Previous behavior	<ul style="list-style-type: none"> <li>• Demographics of founder(s)</li> </ul>	Previous loans or projects (Zheng et al. 2016), previous success / failure / performance (Lee and Lee 2012), support of other projects (Boeuf et al. 2014)
	Demographics	<ul style="list-style-type: none"> <li>• Physical attributes of founder(s)</li> <li>• All social capital of founders</li> <li>• Social status and social network</li> <li>• Behavior of others directly linked with project, campaign or campaign starter</li> <li>• Endorsements from other parties than founder(s) or investors</li> <li>• Not directly linked to campaign or investment behavior</li> </ul>	Age (Loureiro and Gonzalez 2015), gender (Colombo et al. 2015), geography, ethnicity (Pope and Sydnor 2011) Attractiveness (Gonzalez and Loureiro 2014), weight (Jenq et al. 2015) Social status (Ahlers et al. 2015), friends and family (Jian and Shin 2015), online relations (Saxton and Wang 2014), strength of bonds (Liu et al. 2015) Other's funding behavior (Burch et al. 2013b), behavior of investors friends (Luo and Lin 2013), behavior of founders' friends (Lin et al. 2013) Peer or principal endorsements (referrals, reviews, recommendations, awards ...) (Greiner and Wang 2010), publicity and media coverage (Beier and Wagner 2015), social network exposure (Thies et al. 2014)
Context	Platform context	<ul style="list-style-type: none"> <li>• All aspects of the platform that should not, but do, influence the investment decision</li> </ul>	Affordances or general features and functionality of the crowdfunding platform (Choy and Schlagwein 2016)
	Investor context	<ul style="list-style-type: none"> <li>• All aspects of the investor's direct surroundings that should not, but do, influence investment decisions</li> </ul>	Immediate surroundings, characteristics of used device, mobile access (Burch et al. 2015)
Investor characteristics	Affectual reaction Motives	<ul style="list-style-type: none"> <li>• Emotional reaction of investor</li> <li>• General motives of investor</li> </ul>	Positive and negative affective reactions (Genevsky and Knutson 2015) Involvement, investor type and motives (Ryu and Kim 2016), charitable orientation (Meer 2014), environmental orientation (Hörisch 2015)
	Relational fit	<ul style="list-style-type: none"> <li>• Personal preferences of investor</li> <li>• Similarity and proximity between founder(s) and investor</li> </ul>	Similarity (personality, demographics, ...) (Galak et al. 2011), proximity (geographic, cultural, ...) (Burch et al. 2014c), competition (Loureiro and Gonzalez 2015)
	Cognitive features	<ul style="list-style-type: none"> <li>• Cognitive features and aspects of the investor</li> </ul>	Way of thinking, need for cognition (Choy and Schlagwein 2016), used heuristics, need for privacy (Burch et al. 2013a)
	Experience	<ul style="list-style-type: none"> <li>• Relevant experience with a type of investment, product, or project</li> </ul>	Experience of investors, professional investors (Mollick and Nanda 2015)

**Fig. 4** Number of articles by category and crowdfunding type



2013). A longer payback term in peer-to-peer lending leads to lower funding success (Genevsky and Knutson 2015; Jenq et al. 2015; Lee and Lee 2012), while high interest rates (Dorfleitner et al. 2016) increase funding. For equity crowdfunding, profitable exit options (Ahlers et al. 2015) and a high potential return on investment (Vulkan et al. 2016) increase funding probability. The general quality of the benefit is especially important for products and services (Hobbs et al. 2016). In the absence of direct access, the quality of the prospective product is judged on the basis of the available information, such as prototypes, samples, or product descriptions (Galuszka and Bystrov 2014).

*Perceived process quality* refers to the perceived quality of the process that leads to the promised benefit. It also includes the quality of the crowdfunding campaign as part of the larger process. A high-quality campaign or pitch is necessary and significantly helps to raise the desired funds (Greiner and Wang 2010; Hobbs et al. 2016). Similar to classical venture capitalists or business angels, the investors want to be convinced that the founders put the necessary effort in their campaign. In this way, a well prepared campaign acts as a signal for a high overall process quality and invested effort (Mollick 2014; Mollick and Robb 2016). Avoidable mistakes such as bad spelling have a negative impact on the funding (Dorfleitner et al. 2016; Mollick 2014).

High process quality is also signaled by the amount of available information. A founder who provides relevant and detailed information signals preparedness and seriousness to potential investors. Likewise, more information, for example in the form of textual descriptions of the founders and their venture or media content, provides a broader basis for the investor to evaluate the potential investment (Prystav 2016; Zheng et al. 2014). Videos are particularly important (Beier and Wagner 2015; Hörisch 2015; Mollick 2014; Zvilichovsky et al. 2013), as they allow potential investors to develop a feeling for the founders' preparedness, competences, and passion. The video in a crowdfunding campaign is the equivalent of the conventional pitch in front of venture capitalists or business angels (Mollick 2014).

Omitting crucial information such as financial forecasts or a liability disclaimer has a negative impact on funding (Ahlers et al. 2015). Founders can also signal process quality, and

thereby secure higher funding, through high activity (Mollick 2014), for example by promptly answering questions and providing frequent updates or progress reports (Antonenko et al. 2014; Beier and Wagner 2015; Hobbs et al. 2016; Lee and Lee 2012; Zheng et al. 2016).

**Financial risk and campaign statistics** *Financial risk* is mostly relevant for campaigns that promise a physical or monetary reward in exchange for investment. Availability of information that allows judging or mitigating the financial risk favorably affects funding decisions, for example high credit grades (Greiner and Wang 2010; Loureiro and Gonzalez 2015; Michels 2012) or detailed business plans (Moritz et al. 2015). But results are mixed: some economic signals such as a low debt-to-income ratio or verified bank accounts have a positive influence on funding (e.g., Greiner and Wang 2010; Michels 2012), while other signals, such as verified home ownership, have no significant impact (Michels 2012). Equity offerings that are too high compared to the requested investment are perceived as a signal for higher risk (Ahlers et al. 2015).

The actual *campaign statistics* and status, such as the requested funding or a campaign's duration, also influence investors' decisions. Longer duration usually leads to higher results (Cordova et al. 2015; Hörisch 2015; Mendes-Da-Silva et al. 2016; Mollick 2014; Zheng et al. 2014). Unclear, however, is whether the size of the funding goal has a positive (Michels 2012; Vulkan et al. 2016) or negative (Hörisch 2015; Jenq et al. 2015) effect on the investor's choice, or whether it is significant at all (Genevsky and Knutson 2015). But the requested amount should be reasonable regarding the funded venture (Antonenko et al. 2014).

**Founder perception and attributes** An investor invests in a team of *founders*, including their skills and *characteristics*, as much as in a specific idea or venture. Therefore, the qualities and "pedigree" of the founder or founding team are important for the investment decision (Mollick and Robb 2016). The crowdfunding setting usually lacks physical contact between investor and founder. For this reason, investors have to infer the qualities of the team from the information provided via the crowdfunding platform. The founders, on the other hand, have



to signal their competences to increase chances of funding. Signals that positively influence funding include the education and size of the founding team (Ahlers et al. 2015; Belleflamme et al. 2013) or the perceived sympathy, openness, and trustworthiness (Duarte et al. 2012; Herzenstein et al. 2011a; Moritz et al. 2015). Even if the reduction in information asymmetries is only perceived, a positive feeling toward the founder leads to favorable investor decisions (Moritz et al. 2015).

To convey the general narrative of a campaign, it is important to convince investors of intentions and goals (Frydrych et al. 2014). But in written text founders can easily make unverifiable claims. Especially in the absence of hard information, these claims are sometimes the only basis for an investment decision (Dorfleitner et al. 2016). Nonetheless, unverifiable disclosures, accounts, and explanations have a positive impact on how investors decide (Herzenstein et al. 2011a; Michels 2012), especially if the available hard information is less favorable (Prystav 2016). They create a generally more positive attitude of the investor toward the founder, as for example when they explain undesirable behavior such as a borrower being late for loan payments (Yum et al. 2012). While these disclosures increase funding, they can also be excuses and empty promises and often indicate bad performance of a venture or loan (Sonenshein et al. 2011). Investors prefer less business-oriented language in the narrative when considering to participate in prosocial causes. Too much focus on extrinsic motives can prime the investor and damage this non-profit attitude (Allison et al. 2015). Studies also reveal a negative impact of certain textual cues on funding (Moss et al. 2015), although one study found that the percentage of positively or negatively connoted words in the textual description has no significant effect on an investor's decision (Genevsky and Knutson 2015). Independent of the content, active interaction with potential investors increases chances for success, for example by *communication* through social network sites (Galuszka and Bystrov 2014). Even though personal communication is difficult in a crowdfunding setting, pseudo-personal communication is effective as a proxy for establishing relationships (Moritz et al. 2015).

*Previous behavior* can be an indication of future behavior. In general, successful previous campaigns can lead to higher investments, especially if the founders delivered on their promises (Yum et al. 2012; Zheng et al. 2016; Zvilichovsky et al. 2013). The number of failed campaigns has no significant effect (Lee and Lee 2012; Zvilichovsky et al. 2013). The cultural space provides an exception, as previous projects have a negative impact on funding of future projects, possibly because the crowd desires to support diversity (Boeuf et al. 2014). When founders themselves become investors and fund other projects, they increase the success of their own projects

(Boeuf et al. 2014; Xu et al. 2016; Zheng et al. 2014; Zvilichovsky et al. 2013).

*Demographic and physical attributes* of founders are easy to derive from profile descriptions and images and have a strong impact on investment decisions. Some studies show higher success rates for female founders (Chemin and De Laat 2013; Colombo et al. 2015; Genevsky and Knutson 2015) while others find no significance for gender (Barasinska and Schäfer 2014). These findings indicate that crowdfunding might offer opportunities for women, as traditional venture capitalism is mostly dominated by men (Mollick and Robb 2016). Like being female, higher age of individuals is positively correlated with favorable investor decisions (Loureiro and Gonzalez 2015) as age is a sign of experience and competence (Gonzalez and Loureiro 2014). The impact of attractiveness seems to be disputed: some studies see benefits (Jenq et al. 2015), whereas others find no significance of physical appearance (Chemin and De Laat 2013) or different perceptions between men and women (Loureiro and Gonzalez 2015). Beauty appears to be mediated by age, where with higher age – and perceived competence – the positive effect of attractiveness diminishes (Gonzalez and Loureiro 2014). High body weight also has a negative impact (Jenq et al. 2015) and skin color influences investors' decisions, with dark-skinned founders receiving fewer funds (Jenq et al. 2015; Pope and Sydnor 2011). Interestingly, for peer-to-peer lending this discrimination is weaker than the higher default rate for borrowers with darker skin color. Therefore, statistically speaking, white borrowers are actually discriminated against (Chemin and De Laat 2013; Pope and Sydnor 2011).

**Social, relationships, and endorsements** The *social capital* of the founders – that is, their social network or status – influences how investors decide (Ahlers et al. 2015; Lin et al. 2013; Zheng et al. 2014). Many friends and family members help to drive funding, especially in the early phases of a campaign (Colombo et al. 2015; Jian and Shin 2015), and investors would rather lend money to their friends than to strangers (Liu et al. 2015). Many connections on social network sites and activity on those sites also positively influence investor decisions (Belleflamme et al. 2013; Galuszka and Bystrov 2014; Mollick 2014; Saxton and Wang 2014).

When it comes to *social dynamics*, the best-researched behavior in crowdfunding seems to be “herding” – the phenomenon of investors attracting other investors (Agrawal et al. 2015; Burtch et al. 2013b; Choy and Schlagwein 2016; Cordova et al. 2015; Herzenstein et al. 2011a; Hobbs et al. 2016; Lee and Lee 2012; Luo and Lin 2013; Thies et al. 2014). Herding is especially significant for early stages of funding (Colombo et al. 2015) and large numbers of single investments (Vulkan et al. 2016). Rational herding implies leveraging the “wisdom of the crowd” to mitigate missing hard information (Mollick and Nanda 2015; Yum et al.

2012; Zhang and Liu 2012). Counterintuitively, when hard information is available, the crowd sometimes engages in irrational herding, where the effect is stronger in the face of unfavorable hard information and weaker with favorable hard information (Zhang and Liu 2012). Crowds can also follow the lead of one knowledgeable investor, forming a syndicate in which only one person has to perform the necessary due diligence (Agrawal et al. 2016). Besides behavior of anonymous investors, behavior of the investor's friends is also of relevance (Burtch et al. 2014a; Luo and Lin 2013). Bids of the investor's close friends act as a strong quality signal, while the difference between distant friends and strangers has little or no significance (Liu et al. 2015). The behavior of the founder's friends is generally important: if they don't believe in their friend's ventures, others lose confidence as well (Lin et al. 2013), although in some cases investments of the founder's friends can reduce herding (Liu et al. 2015).

*Endorsements* from *third parties* can help funding. Peer endorsements come in the form of referrals or positive reviews, for example on social media sites (Burtch et al. 2014a; Greiner and Wang 2010). Principal endorsements are provided by media outlets or subject experts (Mollick and Robb 2016). Grants or awards provided by third parties have no significant influence on investors' decisions (Ahlers et al. 2015). General publicity also helps to attract potential investors, and drives funding as a consequence (Burtch et al. 2013b). Publicity can come in the form of external website traffic, Twitter tweets, Facebook shares, media outlets, or a crowdfunding platform featuring a campaign (Beier and Wagner 2015; Hong et al. 2015, p. 201; Saxton and Wang 2014; Thies et al. 2014).

**Context** Examples of *platform context* are the affordances or general features and functionality of the crowdfunding platform, such as how and which information is visually presented to the investor or the flow of the investment process (Choy and Schlagwein 2016). Another example is the significant effect of privacy prompts on conversion and contribution (Burtch et al. 2014b, 2015). The *investor context* could be the device that is used to access the crowdfunding campaign. An investor using mobile devices, for example, is less likely to invest in a campaign (Burtch et al. 2014a, 2015).

**Investor characteristics** If investors have a positive *affectual reaction* when reading a text or viewing images (e.g., the profile picture of a borrower) funding is improved (Dorfleitner et al. 2016; Genevsky and Knutson 2015), whereas negative affectual reactions to media seem to have no significant effect (Genevsky and Knutson 2015).

Investors' basic *motives* define which ventures they are willing to invest in (Choy and Schlagwein 2016; Gerber and Hui 2013; Ryu and Kim 2016). Motives of the investors often differ by the type of crowdfunding. Donation-based crowdfunding usually

appeals to more altruistic motives (Meer 2014). Equity-based crowdfunding predominantly motivates investors by the return on investment (Cholakova and Clarysse 2015; Vulkan et al. 2016), but other motivations, such as social recognition, lobbying for the investor's own cause, or even liking of the venture have been shown to also influence an investment decision (Bretschneider and Leimeister 2017). Outside of equity-based crowdfunding, many investors have a general propensity to give money to non-profit ventures, which have a higher chance of funding compared to for-profit ventures (Allison et al. 2015; Belleflamme et al. 2013; Burtch et al. 2013b; Galuszka and Bystrov 2014; Pitschner and Pitschner-Finn 2014). Not all types of non-profits benefit from this preference. Campaigns with a focus on environmental factors, art, or human services have a harder time getting funding (Hörisch 2015; Saxton and Wang 2014). Offering monetary rewards can also crowd out the non-material motives and therefore negatively affect funding for ventures where altruistic and non-monetary motives are key (Boeuf et al. 2014; Cholakova and Clarysse 2015).

Investors in general prefer founders with a high *relational fit* – that is, are similar to them, such as founders with the same gender or occupation (Galak et al. 2011; Loureiro and Gonzalez 2015). Interestingly, sometimes similarity leads to perceived competition. Men are less likely to fund male borrowers who are attractive, despite or even because of high credit ratings (Gonzalez and Loureiro 2014; Loureiro and Gonzalez 2015). The importance of geographic location is less pronounced than in traditional venture capital but it still affects spending (Mollick 2014). Investors prefer founders and ventures that are geographically close to them (Burtch et al. 2014a, c; Lin and Viswanathan 2015; Mendes-Da-Silva et al. 2016) although another study suggests that geographic distance is not significant (Agrawal et al. 2015). Cultural difference has an even higher impact but the effect is mediated by geographic distance and decreases with each additional kilometer (Burtch et al. 2014c).

Some biases, such as preferences for certain physical and demographic attributes, are reduced with increasing *experience* of the investor. In some cases the “wisdom of the crowd” seems to work quite well. For example, a study into theater crowdfunding revealed similar tendencies between the crowd's decisions and experts' judgments, even though the crowd was a bit less conservative (Mollick and Nanda 2015).

Finally, an investor's decision also depends on *cognitive features*, such as how well the crowdfunding platform supports an investor's way of thinking (Choy and Schlagwein 2016) or the individual's need for privacy (Burtch et al. 2013a).

## Discussion

We discuss our findings on three levels: findings within the individual categories, findings between the categories, and

findings of differences between decisions in crowdfunding and traditional financing. We introduce research propositions and future research paths for each level.

### Research within individual categories

The categories from our framework differ in how well they are researched and the impact they have on decision-making, depending on the type of crowdfunding.

#### *Neglected factors in extant research*

Not all factors influencing the investor's decisions have been researched to the same extent. Especially the context of a decision and individual cognitive features received scant attention to date. Only few studies have examined how the platform or personal context influences investment decisions. As most studies use secondary data scraped from the platforms, the often subtle contextual factors are difficult to judge solely on the basis of this data. Studies that did focus on this category of influencing factors mostly used experimental approaches (e.g., Burtch et al. 2014a, 2015). But first findings do suggest the importance of how the environment of the platform and the personal context influence decisions (Burtch et al. 2015; Choy and Schlagwein 2016).

Investor characteristics in general have been extensively researched, but cognitive factors are often omitted. The impact of an investor's cognitive style, abilities, and experience on an investment decision are well recognized in psychology and traditional financing literature (e.g., Hisrich and Jankowicz 1990; Thaler and Sunstein 2008). First studies in crowdfunding also show high relevance of cognitive factors (Choy and Schlagwein 2016). When a solid decision basis is missing, the human mind resorts to heuristics and approximations to come to a conclusion (Tversky and Kahneman 1974). This response can lead to systematically biased and flawed decisions and particularly drives amateur investors into making potentially expensive choices on the basis of hunches instead of conscious consideration (Kahneman 2011; Thaler 1980). These factors have scarcely been tested empirically for crowdfunding, possibly because soft factors are more difficult to conceptualize and test than hard facts, such as number of followers, interest rate, or credit rating.

#### *Differences based on the type of crowdfunding*

Application of the framework shows varying relevance of each decision-making category for the different crowdfunding types. This starts with the investment motivation that strongly differs between the types. These range from altruism for donation-based, hedonism for reward-based, and profit-orientation for equity-based crowdfunding (Meer 2014; Mollick 2014; Vulkan et al.

2016), although investors are usually driven by a mixture of different motivations (Bretschneider and Leimeister 2017). The benefits and quality of a campaign show more relevance in reward- and lending-based campaigns, possibly because investors have a clear goal if they lend money for interest or pre-purchase an interesting product as a reward (Mollick 2014). In donations, investors usually strive for a less tangible "good cause" and do not apply the same scrutiny to hard results and rigorously planned projects (Andreoni 1990; Cheung and Chan 2000). While relevant for all types, financial risk is especially important to lending. Campaign statistics show high significance for all types of crowdfunding, conceivably because crowdfunders resort to the statistics they have at hand to substitute for a lack of hard financial data. The same is true for founder perception, where subjective impressions can substitute for a lack of hard, reliable facts (Herzenstein et al. 2011b). While generally important for the investment decision, social factors seem to have more impact on donation- and lending-based crowdfunding than on equity- and reward-based campaigns, likely owing to the lack of an actual product to base an investment decision on. Instead, funders have to use other indicators, such as behavior of others, to determine whether an individual is eligible for a personal loan or a charity is worth the money. Even though few studies have been conducted, the context of a decision seems to be especially relevant for reward- and donation-based crowdfunding (e.g., Ahlers et al. 2015; Choy and Schlagwein 2016). In general, judging the impact of influencing factors based on the types of crowdfunding is difficult, as hardly any study (<5% of studies) compares the different crowdfunding types. Furthermore, when reviewing research into the different crowdfunding types, a lack of research for equity crowdfunding, the youngest phenomenon, becomes apparent.

#### *Impact on funding success – a lack of hard data*

Without further empirical studies, each category's importance for decision-making is hard to determine. The underlying studies are quite heterogeneous in nature, ranking from the method they apply to how (especially how diligent) they perform the analyses. Only very few articles provide reliable quantitative data that allows for clean aggregation and further analysis. In addition, the number of articles to date is still limited. Therefore, the data for each decision-making factor is also limited and does not lead to representative meta-analyses. Finally, most factors show very diverse results, from positive to negative to inconclusive. Those contradictions are highlighted in the qualitative descriptions of the factors. Due to these reasons, we cannot provide a meta-analysis to ground the



relevance of the categories of our decision-making framework in literature. However, as a first indicator for future research efforts, we included some basic analyses regarding the number of successful statistical tests and directions of these tests in the [Appendix](#).

Many factors (59 of 74) have been tested for their positive or negative influence on funding success. The results are frequently inconclusive and, as described before, often conflicting. This is likely in parts due to the many moderating effects between the different factors and the large impact of the type of crowdfunding. Unfortunately, only few articles provide reliable quantitative data that allows for clean aggregation and further analysis. Focusing on only these articles would result in non-representative and highly skewed results. Once the body of research has further grown, a rigorous meta-analysis will provide a promising avenue to uncover systematic patterns.

#### *Research propositions for research on single categories*

- P1. Contextual factors and individual cognitive features of decision-makers substantially influence the investment decision in crowdfunding. Especially subconscious factors impact how investors behave.
- P2. Although grouped under the same term, the types of crowdfunding differ vastly in how they are impacted by the decision-influencing factors. Decisions in equity- and lending-based crowdfunding place much more emphasis on risk and return. Donation- and reward-based crowdfunding focus more on factors that provide evidence for the altruistic and hedonistic value of a venture.

### **Dynamics and influences between categories**

The interaction between the different factors and categories has received little attention to date. In addition, the existing research focusses more on HOW different factors influence decisions, rather than investigating the WHY.

#### *Interaction between factors and categories*

Current research focuses mostly on individual factors in single categories rather than on interconnections or underlying decision processes. In many instances, research does not look at the decision itself but rather at the impact of different factors on the overall funding success of a campaign – that is, whether the funding goal was reached and how much money was collected. Much less research investigates how the factors differ from each other and how the categories interact (e.g., Herzenstein et al. 2011b). The extant research suggests that the factors cannot only be

considered in an isolated view, but decisions are also influenced by how they interact with each other. As discussed before, if a factor has a positive or negative impact on a decision often depends on moderating circumstances. For example, can soft factors influence the interpretation of, or even fully substitute for, hard facts (e.g., Dorfleitner et al. 2016). In addition, it frequently remains unclear why certain factors influence investors' decisions more than others. Furthermore, there is scant differentiation between information that investors consciously evaluate or that has a subconscious influence. Both are aspects of high relevance in designing and building crowdfunding platforms and supporting investors in making their choice.

#### *Insights into the decision-making process*

To fully understand a decision, an analysis must not only consider a multitude of individual factors and the overall funding success of a campaign but must also look at the entire decision-making process and how it is influenced in each step (e.g., Darley et al. 2010). Decisions that eventually lead to an investment are made from the first discovery of a campaign to the final choice about whether and how much to invest. Ultimately, we not only want to know that certain factors change an outcome, but we want to know WHY this is the case. Understanding these reasons requires a broader methodological approach. Most existing studies rely on analyzing secondary data from past campaigns, which limits the breadth of possible insights. More experimental methods, for example, could allow closer observation of decision-making in controlled environments. A more qualitative focus on underlying beliefs and decisions, e.g., using in-depth interviews or focus groups, could help to get a better understanding of why investors decide in a specific way, or which information is evaluated on a conscious and subconscious level.

#### *Research propositions for research between categories*

- P3. Decision-making in crowdfunding cannot be fully understood by observing isolated factors. Moderating effects and substitution of information between different categories have significant impact on decisions and can only be understood by researching different factors and categories together.
- P4. The investment decision is more than the sum of its parts. A broader set of research methods (e.g., more experiments and qualitative studies) will help to better understand the decision process and causalities of influence.



### Comparison of crowdfunding and traditional financing decision-making

To understand the differences between the traditional investment decisions, introduced in the background section, and decision-making in crowdfunding, we compare each crowdfunding type to its traditional counterpart.

**Reward-based crowdfunding versus (online) purchase decisions** The actual quality and usefulness of the final product seem to be of great importance in traditional shopping (Engel et al. 1995). However, the future product quality and attributes are usually unknown for crowdfunding rewards (Galuszka and Bystrov 2014). Therefore, a general hype and an idealized idea of the advertised product have a strong impact on the investment decisions. For the same reason, the financial risk and the statistics of a campaign are important for the funding decision (Moritz et al. 2015). Funders have to find a way to mitigate the risk of their investment and judge the trustworthiness of the founders (Duarte et al. 2012). As for all other crowdfunding types, the social capital of the founders and behavior of other funders have strong impact, which is less present in traditional purchases (Lin et al. 2013). Finally, the founders in crowdfunding are usually strongly evaluated on a personal level and (pseudo-)personal communication as well as appearance have high impact on the investment decision (Gonzalez and Loureiro 2014).

**Equity-based crowdfunding versus venture capital / business angel decisions** While the conventional equity investment idea is essentially the same in equity crowdfunding and some of the decision criteria overlap, the two forms of funding differ strongly in other aspects. General benefits of the product or service are an important factor for crowd investors, as these are usually the first aspects to appeal to funders and create initial interest in an investment (Belleflamme et al. 2013). But the crowdfunding due diligence into the specific attributes, differentiators, and intellectual protection is often much less meticulous. The same is true for financials: while crowdfunders also focus on numbers, they seem to consider numbers to be less important than traditional investors, owing mostly to a lack of access to business information and to less expertise in reading and interpreting financial and business documents (Agrawal et al. 2016). The perception of the founder or founding team is equally important in crowdfunding and an offline setting, but the lack of physical access to the founders requires investors to rely on substitutes to judge them (Ahlers et al. 2015). Examples of such substitutes are product videos, responsiveness to questions, or previous successful campaigns on the same platform (Zvilichovsky et al. 2013). Literature about crowdfunding decisions almost entirely omits any consideration regarding the market of a venture or the market experience of the investors. This neglect makes sense, as the crowd usually does not possess

the necessary expertise and insights (Agrawal et al. 2016). Crowd investors therefore rely on other measures and decisions are influenced much more by the behavior of other investors and the context of a decision (Choy and Schlagwein 2016) – both factors that are less well researched in the traditional investment literature. In the same way, portfolio management and considerations that are important to professional investors (Hall and Hofer 1993) are also neglected in crowdfunding literature. Amateurs seem to approach this type of investment in a less structured way and therefore often don't have a sustainable diversified portfolio at heart.

**Donation-based crowdfunding versus traditional charity decisions** While still relevant in donation-based crowdfunding, the actual cause and the funder's perception of the charity are less important (Belleflamme et al. 2013). As in other types of crowdfunding, investors rely heavily on the behavior of the crowd and on the hard campaign statistics, such as those that indicate the duration or funding goal (Mendes-Da-Silva et al. 2016). This social behavior has received scant attention in traditional charity research. In contrast to bank loans or equity investments, traditional and crowdfunded donations depend strongly on the context of the decision and the characteristics of the investor (Choy and Schlagwein 2016; Duarte et al. 2012). Both are especially important, as donations often follow from impulsive decisions. Therefore, the right surroundings to elicit affective reactions and appeal to personal motives are major factors in determining an investor's decision (Meer 2014).

**Lending-based crowdfunding versus bank loan decisions** As for bank loans, decisions in peer-to-peer lending also place high emphasis on risk and potential reward (Dorfleitner et al. 2016; Michels 2012). In addition, they also strongly rely on subjective perception of the borrowers' attributes and especially on behavior of other lenders (Luo and Lin 2013). Both are necessary to compensate a lack of collateral and personal access to the borrower. Banks traditionally don't consider social dynamics or the context of a decision when granting loans (Altman and Saunders 1997). Even without the extensive experience of loan professionals, these additional decision factors seem to strongly benefit lending amateurs: the crowd's credit judgments are almost as good as those of credit professionals and algorithms (Iyer et al. 2009).

### *Systematic differences in the factors influencing decision-making*

Based on our analysis of the different crowdfunding and traditional investment types, we derive three systematic differences in the influencing factors (see Table 4 for an overview).

First, social capital becomes even more important. To profit from social dynamics, crowdfunding requires not only personal contacts to important individuals and investors but a wide social

**Table 4** Major differences in the influencing factors between crowdfunding and traditional financing decisions

Difference	Description
Social capital	<ul style="list-style-type: none"> <li>• High influence of social capital, especially status and reach on social network sites</li> <li>• Social capital is critical to create investment dynamics through herding</li> </ul>
Substitutes	<ul style="list-style-type: none"> <li>• Investors have to substitute for lack of data, trust and experience               <ul style="list-style-type: none"> <li>- “Wisdom of the crowd” bundles skills and knowledge of many individuals</li> <li>- Following others replaces own judgment</li> <li>- Likeability, emotional reaction and other soft factors replace hard data</li> <li>- Campaign statistics provide hard data to use in decision-making</li> </ul> </li> </ul>
Ubiquitous contextual impact	<ul style="list-style-type: none"> <li>• Different and more ubiquitous contextual impact of digital technology               <ul style="list-style-type: none"> <li>- Digital platforms are at the heart of the investment process</li> <li>- Platform design and features influences decisions</li> <li>- Investment through digital technology (e.g., computers, mobile phones) shapes perception and investment behavior</li> </ul> </li> </ul>

reach to create awareness for the campaign and win many early investors. Owing to the interactive nature of most crowdfunding platforms and their interconnection to social network sites, every early investor acts as a multiplier and creates social buzz.

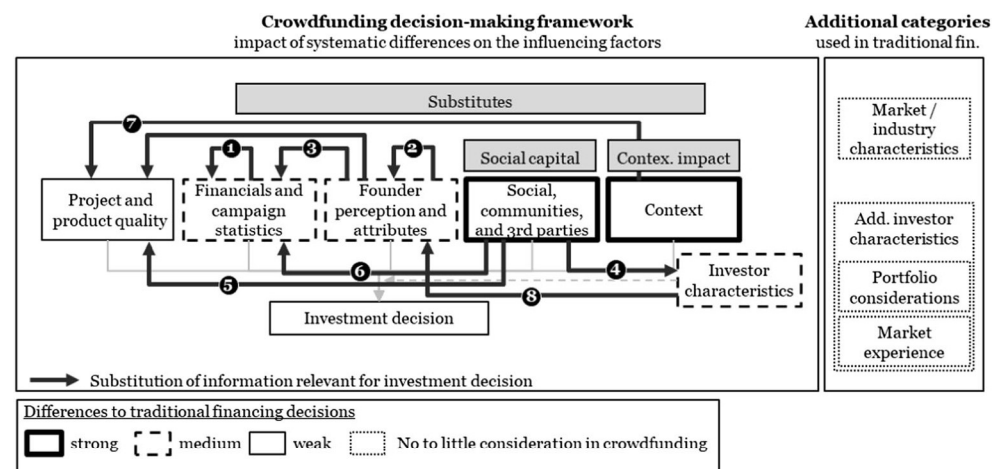
Second, the crowd needs to substitute for a lack of personal access to founders, missing data, and the crowd’s low level of investment experience. With scant viable information, investors use proxies and other modes of evaluation to make their decisions (Moritz et al. 2015). Therefore, each available piece of information is evaluated and every type of signal of the founder is interpreted (Prystav 2016). This explains a strong reliance on the wisdom of the crowd and on social dynamics (Liu et al. 2015), on emotional reactions (Genevsky and Knutson 2015), as well as on every bit of information that can be used to judge a founder’s character and intentions, such as communication behavior, good preparation, or general likability. This can, for example, lead to investors changing their expectation of a venture’s potential outcome or success based on their first affectual reaction to the founders’ image (Pope and Sydnor 2011). This happens because their reaction

influences their perception of the founders, e.g., how trustworthy they are. In this example, the affectual reaction substitutes for facts demonstrating the trustworthiness of the founders, which in turn is used as substitute for a lack of hard data on financial risk. In addition, the campaign statistics a platform provides also work as substitutes, as they can be the most reliable data an investor has at hand. All these substitutes are also necessary to create trust in the founders.

Finally, the ubiquitous digital technology changes the context in which decisions are made. Therefore contextual factors significantly influence a crowdfunder’s choice, such as how information is presented or perceived (Thaler and Sunstein 2008), features of the digital crowdfunding platforms, or characteristics of mobile technology. Consequentially, a human investor considers factors that a purely rational investor, a “homo economicus,” would ignore (Thaler 2000).

All three of these systematic differences directly impact the importance of the categories of our crowdfunding decision-making framework, especially when compared to decisions in traditional financing. Figure 5 presents an

**Fig. 5** Impact of systematic differences on crowdfunding decision-making framework and effect of substitutes, based on crowdfunding decision-making framework in Fig. 3 (for an explanation of the figure, please refer to the textual description)



overview of how the differences change the relevance of each decision-making category. The extend of the different relevance of each category between crowdfunding and traditional financing is marked by different frames around the category labels. The figure also depicts the effect of substitutes (using available information to replace non-available information) on decision-making. The increased relevance of social capital and ubiquitous contextual impact through information technology are directly relevant for the according categories (“Social, communities, and 3rd parties” and “Context”), pronouncing the differences when compared to traditional decisions. The substitutes, in contrast, impact all categories (the number in brackets are references to the number of the substitution relationships / arrows in Fig. 5):

**Financials and campaign statistics** In lack of hard data to judge the financial risk, investors often resort to the available campaign statistics, such as current investments, campaign duration, or funding goal, as substitutes (1).

**Founder perception and attributes** On the one hand, many visible attributes of founders (demographics, physical attributes, previous and current behaviour) are used as substitutes for the founders’ less visible character traits, such as trustworthiness or competence (2). On the other hand, this subjective perception of the founders is used to substitute for a lack of hard information regarding the financials and project and product quality (3). I.e., they ascribe higher competence and thus lower financial risk and better outcome to how they perceive the founders’ characteristics.

**Social, communities, and 3<sup>rd</sup> parties** Endorsements of 3<sup>rd</sup> parties (as indicator of “expert knowledge”) and social dynamics (as “wisdom of the crowd”) substitute for the investor’s experience (4). There are also both used as direct substitutes for the perceived quality of a venture (5) and the financial risk (6) – what many others like can’t be bad.

**Context** Contextual cues, e.g., the design and functionality of a platform, directly influence the investor’s perception of a campaign. In this way, the quality of the design and ease of interaction can become direct substitutes for the project, product, and process quality (7).

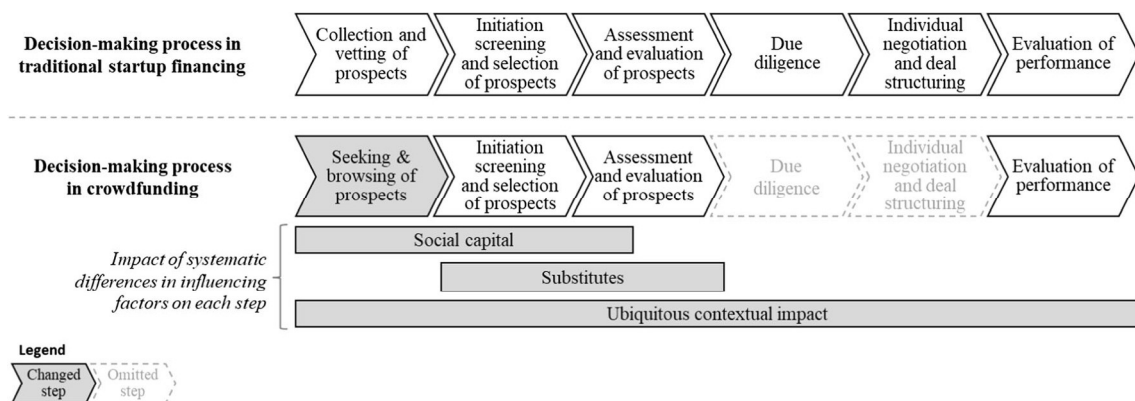
**Investor characteristics** When not able to reliably judge the characteristics of a founder based on hard information or personal contact, investors often use their initial affective reaction and their perceived relational fit (e.g., felt similarity or compatibility) as substitutes (8).

#### *Systematic differences in the decision process*

Besides the different evaluation of factors, there are also systematic differences in the decision process (see Fig. 6). When comparing crowdfunding with the traditional process of startup financing (based on Altman 1980; Danos et al. 1989; Hall and Hofer 1993), two main deviations become apparent.

First, the selection and evaluation of prospects deviates between crowdfunding and traditional finance. While banks and VCs usually receive applications for loans and funding and have institutional processes to vet suitable founders, the common crowd investor must rely on his own search and pre-filtering. This search is massively influenced by the large number of crowdfunding platforms that advertise their campaigns. How a platform presents and highlights certain campaigns over others or how easily platforms and campaigns can be found through search engines and other channels (e.g., social media) massively influences the initial selection of prospects to invest in (Beaulieu et al. 2015).

Second, decisions in traditional financing are preceded by an in-depth financial due diligence and often individual negotiation or deal-structuring. Due to the lack of personal access and limited hard and reliable financial information the due diligence is substantially less thorough or even nonexistent



**Fig. 6** Comparison of decision-making process for crowdfunding and traditional startup financing and impact of systematic differences in influencing factors on process steps (process based on Altman 1980; Danos et al. 1989; Hall and Hofer 1993)



in crowdfunding. A lack of experience and skill in evaluating financial data on side of the amateur investors increases this gap to traditional financial decisions (Mollick and Nanda 2015).

Third, the high number of investors, and again the lack of capabilities of investment amateurs, makes negotiation of an individual deal impractical to impossible.

The previously explained differences of influencing factors between traditional financing and crowdfunding are relevant for all steps of the decision-making process in crowdfunding. The social capital is especially important to spread and kick-start a campaign. Substitutes are relevant in the selection and evaluation of suitable prospects, when they provide a basis for building trust and making the final investment decision. The ubiquitous impact of digital technology changes the interaction and therefore influences decisions throughout every step of the process.

#### *Drivers of systematic differences between crowdfunding and traditional finance*

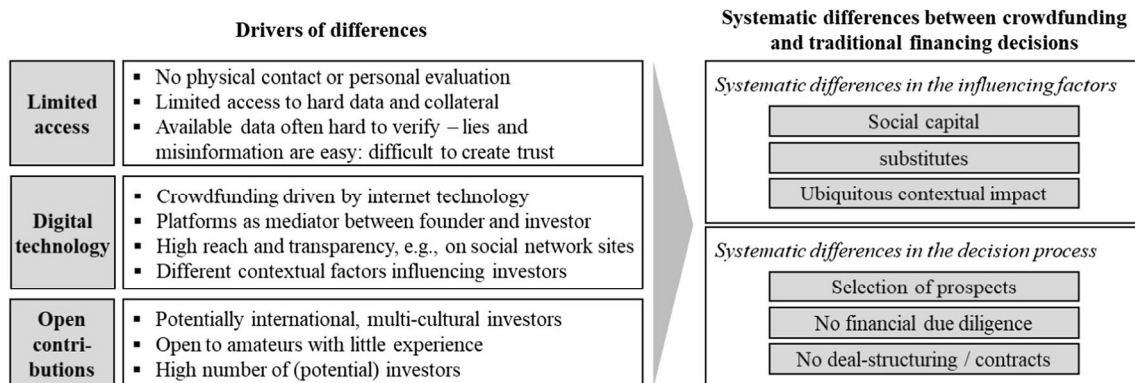
Further analysis of the literature reveals that the systematic differences are driven by three fundamental properties of crowdfunding campaigns (Fig. 7). These three properties are: the limited access to the founders and reliable data about their venture, the underlying digital technology, and the openness to a wide target audience. First, limited (physical) access deprives investors of personally judging the founders (Ahlers et al. 2015). It also limits the availability of collateral and reliable hard data (Moritz et al. 2015). The data that is provided is frequently hard to verify and misinformation or lies have to be expected (Whitty and Joinson 2008). Therefore, investors resort to substitutes to compensate for this lack of reliable information. Second, besides creating a different decision-making context, digital platforms that act as mediator between founder and investor not only enable crowdfunding

but also create a high reach and transparency (Haas et al. 2014; Herzenstein et al. 2011a). This increases the relevance of other investors' behavior and social capital, and exposes every action of the founders to a global audience (Gleasure 2015). Third, platforms are usually open for contributions, allowing investors with a wide variety of different cultural backgrounds to participate (Burtch et al. 2014c; Dushnitsky et al. 2016). This openness also motivates amateurs with limited investment experience in venture financing to participate in the crowdfunding campaigns (Mollick and Nanda 2015). These amateurs often lack the sophistication and knowledge of professional venture capitalist or business angels and evaluate available information differently – or not at all. This, again, leads to stronger reliance on substitutes instead of the available hard data. The founders, furthermore, have to convince a very diverse audience without the option to negotiate individual agreements or adapt their communication to individual investors.

While these drivers are based on the crowdfunding decision-making literature, they are of similar relevance to other digital platforms. Moving previously physical services into a digital mediated environment and making it accessible to a large crowd of providers and consumers without physical interaction substantially changes how consumers make decisions.

#### *Research propositions for the comparison of crowdfunding and traditional financial decisions*

- P5. Crowdfunding decisions differ from traditional investment decisions in three major aspects: (1) the influence of social capital on campaign success is larger (e.g., due to multipliers such as social network sites and social buzz), (2) the investors use substitutes to compensate for a lack of data, personal access, and experience, and (3) the ubiquitous contextual influence of digital technologies impacts the decisions.



**Fig. 7** Drivers of differences between crowdfunding and traditional financing decisions



- P6. Amateurs behave differently from professionals when investing into the same crowdfunding campaigns. They, e.g., use social dynamics and other factors to substitute for a lack of experience.
- P7. Amateur crowdfunders frequently forgo the necessary due diligence process, increasing the risk and decreasing the return on investment (in equity and lending-based crowdfunding).
- P8. The differences between crowdfunding and traditional financing decisions are driven by three characteristics of crowdfunding: (1) limited access to data and the founders, (2) characteristics of digital technology, and (3) openness of contribution to an often unrestricted crowd.

#### *Selected research inspirations from the developed propositions*

We present selected avenues for future research in Table 5. They are based on the results of our review as well as the observations that culminated in our research propositions. For each research proposition in the three discussed research areas, we provide potential paths for future research.

These exemplary paths are not exhaustive and offer first ideas of how each research proposition could be investigated to fill gaps and generate further insights.

#### **Contribution and concluding remarks**

We sought to understand which factors influence investor decision-making in crowdfunding and how decisions differ between crowdfunding and traditional financing. Our interdisciplinary review provided answers to both questions by systematically analyzing the extant literature.

We contribute to crowdfunding literature threefold: we provide an integrated view of investor decision-making in crowdfunding, highlight systematic differences between decisions in crowdfunding and traditional financial decisions as well as the drivers of these differences. Additionally, we provide crowdfunding scholars with possible future paths based on identified research gaps.

First, research on crowdfunding investment decisions is quickly growing but most articles focus on very few factors of the investors' decisions or the funding success of a campaign (Moritz and Block 2016). These factors include, for example, investor motivation (e.g., Bretschneider and

**Table 5** Selected research opportunities in the field of crowdfunding investor decision-making

Research area	Research propositions	Exemplary research paths
Research in individual categories	[P1] Context of a decision and cognitive features strongly influence the investment decision.	<ul style="list-style-type: none"> <li>• Relevance of cognitive style and subconscious factors for crowdfunding decision-making.</li> <li>• Influence of platform features, functionality, and design on investment decisions.</li> </ul>
	[P2] Type of crowdfunding influences relevance of decision-making factors.	<ul style="list-style-type: none"> <li>• Systematic decision-making differences between the different types of crowdfunding.</li> </ul>
Dynamics and influences between categories	[P3] Moderation effects and substitution of missing information influences investment decision.	<ul style="list-style-type: none"> <li>• Moderating and mediating effects between different decision-making factors.</li> <li>• Differences in evaluation of hard and soft factors, e.g., substitution effects</li> </ul>
	[P4] Deeper analysis of the investors' decision-making process will help fully understand decision-making.	<ul style="list-style-type: none"> <li>• Analysis of end-to-end decision-making process from discovery to final investment decision.</li> <li>• Identifying the ideal platform design to support end-to-end decision-making process.</li> </ul>
Comparison of crowdfunding and traditional financial decision-making	[P5] Crowdfunding decisions differ systematically from traditional financing decisions.	<ul style="list-style-type: none"> <li>• Differences in investor behaviour when facing similar decisions through crowdfunding platforms and traditional investment channels.</li> <li>• Reasons and drivers for systematic differences.</li> </ul>
	[P6] Amateurs behave differently from professionals in crowdfunding.	<ul style="list-style-type: none"> <li>• Details on behavioral differences between professional and amateur investors.</li> </ul>
	[P7] Crowdfunders forgo necessary due diligence before investing	<ul style="list-style-type: none"> <li>• Impact of reduced due diligence on return on investment and default rates.</li> </ul>
	[P8] Differences driven by underlying characteristics of crowdfunding	<ul style="list-style-type: none"> <li>• Impact of mitigating or changing the characteristics, e.g., limitation of the "crowd" based on country or experience.</li> </ul>

Leimeister 2017; Gerber and Hui 2013), physical appearance (e.g., Jenq et al. 2015; Pope and Sydnor 2011), or social behavior (e.g., Herzenstein et al. 2011a; Liu et al. 2015). We build on these individual findings and develop an integrated and comprehensive view of influencing factors. By providing this integrated framework, we combine findings and ideas from the research to date. Future research can build on this integrated view, e.g., to identify currently less investigated aspects of crowdfunding decision-making and motivate additional studies. The framework also allows scholars to consider relevant influencing factors, e.g., as controls, when investigating isolated aspects. Only focusing on an incomplete set of decision-making factors might lead to skewed results either in the setup of a study or in the interpretation and explanation of behaviors. In many instances, articles report conflicting findings (e.g., Chemin and De Laat 2013; Loureiro and Gonzalez 2015), but don't investigate the reason behind the differences. We provide insight into these conflicts, allowing future research to work on better understanding and resolving these contradictions, e.g., by identifying moderating aspects. We also show that and how different factors are used as substitutes for missing information and how this substitution impacts the decision-making.

Second, we extract systematic differences between investment decisions in crowdfunding and traditional financing (especially venture capital). Very few existing articles briefly touch on venture capitalists, business angels, or banks, when investigating investor decisions in crowdfunding (e.g., Ahlers et al. 2015; Mollick and Nanda 2015). Most research does not consider existing literature in traditional financing, when researching crowdfunding, although many similarities exist. We extend the literature by analyzing and explaining differences in decision-making factors and the decision-making process. We also derive the drivers of these systematic differences, showing that amateur investors are not irrational investors but guided by the characteristics of crowdfunding and digital technology. In this way, we not only improve understanding, but also provide a baseline for future research investigating deviant behavior in-depth. We also allow for a further integration of crowdfunding and venture capital / business angel research.

Finally, we derive propositions from our findings and depict possible future research paths. In highlighting gaps, biases (e.g., predominant focus on analysis of secondary data), and interesting avenues for future work, we allow researchers to build on the extant body of crowdfunding investment decision-making knowledge without further in-depth analysis of individual studies.

In addition, we contribute to Information Systems research. The identified drivers not only impact crowdfunding, but also influence decision-making on other digital platforms. Moving previously physical services into a digitally mediated environment and making it accessible to a large crowd of providers

and consumers without physical interaction substantially changes how consumers make decisions. We amend previous research on digital platforms and digital mediation (e.g., Ahlers et al. 2015; Whitty and Joinson 2008) by providing a structured view of drivers, decision-making factors, and decision processes.

Our work also has practical implications for founders, platforms, and other stakeholders. We help founders to further understand how investors make their decisions. On this basis, they can adapt their campaigns and communication, e.g., how to present themselves, which information to provide, and how to interact with (potential) investors. Founders can also try to customize their campaigns for different types of investors, accounting for individual differences. In this way, they can increase the success of their funding and the relations to their investors. Platform operators can use the better understanding of investment behavior to provide founders with toolkits and guidelines to build better campaigns, optimize their signaling and attract, as well as convince, more investors. Operators can also directly adapt the investment process and design of their platforms, e.g., regarding the placement, prominence, or sequence of information. They can allow investors to make educated decisions by highlighting subconscious influence factors, thereby further reducing uncertainty or even manipulation through founders. By increasing success rates of campaigns and the satisfaction of investors at the same time, they will attract more ventures and more investors to their platform. In this way, they can better position themselves towards other crowdfunding platforms and even traditional means of financing. Our findings are also of use to other stakeholders. First, investors can better understand how their decisions are influenced and find additional factors educating their decision. Second, regulators can build on a better understanding of amateur behavior to craft regulation, e.g., to protect investors from subconscious influence and manipulation, or to regulate the provision of relevant documentation. Finally, traditional investors, especially business angels and venture capitalists, can more purposefully expand their investment activities based on the systematic differences between crowdfunding and their core business.

To sum up, crowdfunding offers innovative ways of financing ventures as well as new opportunities to support others and invest money. Given the historic growth rate and the size of the market for loans and investments, its impact on credit markets, venture capital, and entrepreneurial dynamics will likely expand further. We believe that a better understanding of how decisions are made in this context will benefit all involved parties and help investors and founders avoid making bad choices. We hope our results inspire future research and thereby support the development of the field.

## Appendix

**Table 6** Number of articles by sub-categories of the decision-making framework

Category	Sub-category	#
Benefits and quality	Outcome and product	17
	Perceived process qual.	20
Fin. risk and campaign statistics	Financial risk	17
	Campaign statistics	14
Founder perception and attributes	Founder characteristics	12
	Founder communication	18
	Previous behavior	8
	Demographics	13
	Physical attributes	4
Social, relationships and endorsements	Social capital	13
	Social dynamics	24
	3rd party endorsements	16
Context	Platform context	3
	Investor context	2
Investor characteristics	Affectual reaction	4
	Motivation	14
	Relational fit	9
	Cognitive features	2
	Experience	2

Articles are counted only if their main independent variables and hypotheses are factors of the sub-category. Control variables are not considered for this (or any other) analysis

**Table 7** Relevance of each category for crowdfunding – Ratio of significant to all statistical tests performed in the underlying articles, by category and crowdfunding type

Categories	Crowding type									
	Reward		Equity		Donation		Lending		Total	
Benefits and quality	72%	(18)	50%	(6)	55%	(11)	75%	(20)	67%	(55)
Financial risk and campaign statistics	77%	(13)	—	(1)	75%	(4)	82%	(17)	80%	(35)
Founder perception and attributes	79%	(14)	50%	(4)	—	(2)	70%	(66)	71%	(86)
Social, relationships and endorsements	71%	(28)	50%	(4)	85%	(13)	92%	(24)	80%	(69)
Context	100%	(5)	—	(0)	100%	(3)	—	(0)	100%	(8)
Investor characteristics	40%	(25)	67%	(6)	50%	(20)	53%	(19)	49%	(70)

Analysis is based on counting the number of all statistical tests aimed at confirming effects of decision-making factors in every article. The shown percentage is the number of tests with significant results divided by all tests. This ratio can be used as a simple proxy for the relevance of each category for making decisions

Only tests for the main independent variables of each article were included into the analysis; i.e., controls and other factors not related to the main hypotheses were excluded; total number of statistical tests display in brackets; results with less than three tests were excluded, to avoid extremes

**Table 8** Percentage of statistical tests finding a positive influence on the funding success, by category and crowdfunding type

Categories	Crowding type									
	Reward		Equity		Donation		Lending		Total	
Benefits and quality	93%	(15)	50%	(4)	88%	(8)	54%	(13)	75%	(40)
Financial risk and campaign statistics	42%	(12)	—	(1)	75%	(4)	54%	(13)	50%	(30)
Founder perception and attributes	85%	(13)	100%	(3)	67%	(3)	58%	(45)	66%	(64)
Social, relationships and endorsements	95%	(20)	100%	(3)	91%	(11)	45%	(20)	76%	(54)
Context	67%	(3)	—	(0)	33%	(3)	—	(0)	50%	(6)
Investor characteristics	91%	(11)	100%	(4)	75%	(12)	56%	(9)	78%	(36)

Analysis is based on counting the number of all statistical tests aimed at confirming effects of decision-making factors in every article. The shown percentage is the number of tests finding a positive influence divided by all tests

Only tests for the main independent variables of each article were included into the analysis; i.e., controls and other factors not related to the main hypotheses were excluded; total number of statistical tests indicating a positive or negative influence displayed in brackets; results with less than three tests were excluded, to avoid extremes. Deviations from Table 7 are due to not all articles reporting on the direction of the correlation

**Table 9** Dependent variables covered in the articles

DV	#
Funding success (Y/N)	31
Funding amount (\$/€/%)	14
Individual decision (Y/N)	10
Interest rate (%)	9
Individual amount (\$/€/%)	7
Time / speed of funding (t)	6
Number of investors (#)	2
Other	11

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