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(Article begins on next page)

Exploring entrepreneurial characteristics, motivations and behaviours in equity crowdfunding: some evidence from Italy

Exploring
entrepreneurial
characteristics
in ECF

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Abstract

Purpose – This study explores entrepreneurial decision-making in the equity crowdfunding (ECF) context, and it aims to shed some light on the relationship among three aspects: entrepreneurial characteristics (i.e. entrepreneurial alertness and entrepreneurial self-efficacy), entrepreneurial motivations (i.e. promotion, improvement of networking and acquisition of product and market knowledge) and entrepreneurial behaviours (i.e. campaign characteristics in terms of communication and offerings).

Design/methodology/approach – The hypotheses testing and analysis were conducted using the partial least squares approach to structural equation modelling, and data were collected from the overall population of Italian ECF platforms.

Findings – Our results highlight that entrepreneurial characteristics may be central in ECF because of their significant impact on some motivation entrepreneurs have to adopt ECF, which in turn have an impact on meaningful campaign characteristics that can influence ECF performance.

Originality/value – The current literature is mainly focused on investors' decisions, while a neglected perspective until now has been that of entrepreneurs. This study is among the first to focus on entrepreneurs in the ECF context, and, to the best of our knowledge, it is the first study to investigate the entrepreneurial decision-making process. The added value of this research lies in the analysis of the entrepreneurial aspects underlying entrepreneurial decisions to use ECF.

Keywords Entrepreneurial decision-making, Entrepreneurial motivation, Entrepreneurial behaviour, Equity crowdfunding

Paper type Research paper

Introduction

Decision-making is central to the success, longevity and survival of entrepreneurial activities (Caputo and Pellegrini, 2019). It is a well-established topic of interest in several fields, particularly management, but there is still a paucity of studies on entrepreneurial decision-making (EDM) (Shepherd *et al.*, 2015), although EDM is deeply influenced by the evolution and turbulence of the modern global landscape (e.g. new ideas coming out of Fintech, digital platforms, IoT or AI) (Cohen *et al.*, 2017; Li *et al.*, 2018; Agostini and Nosella, 2019; Balodi, 2019; Bullini Orlandi and Pierce, 2020). Given the emphasis on making decisions in uncertain contexts (Pellegrini and Ciappei, 2015), such as crowdfunding (Xu *et al.*, 2015), equity crowdfunding (ECF) is emerging as an intriguing research area within the sphere of entrepreneurship (Cholakova and Clarysse, 2015; McKenny *et al.*, 2017) and in particular EDM (Bruton *et al.*, 2015; Shepherd and Patzelt, 2017). ECF is a fundraising system for entrepreneurs (Ahlers *et al.*, 2015; Vulkan *et al.*, 2016) to sell a specified amount of equity to several small investors through an open call on an Internet-based platform, and it helps entrepreneurs in catching opportunities and in developing or growing their business.



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ECF platforms allow entrepreneurs to finance their initiatives directly from the crowd and tap into its “wisdom” (Belleflamme *et al.*, 2014; Polzin *et al.*, 2018). The potential to attract unrelated investors – i.e. ones other than family members, friends or local businesses – is crucial to inducing entrepreneurs to seek external equity (Baeck *et al.*, 2014; Vismara, 2018) and raise the necessary funds to achieve their goals, such as internationalisation, testing new products, brand development or building a loyal customer base (Estrin *et al.*, 2018). ECF helps entrepreneurs get around the post–2008 crisis (Kunc and Bhandari, 2011) reduction in funds from banks, venture capitalists (VCs) and business angels (BAs) (Kahle and Stulz, 2013; Bruton *et al.*, 2015; Vulkan *et al.*, 2016; Block *et al.*, 2018a).

The global crowdfunding market size will grow by US\$ 89.72 billions during 2018–2022 (Technavio, 2018). ECF has exhibited one of the fastest annual growth rates in the last few years; in fact, its volume has nearly doubled every year, from 392 million dollars in 2013 to over 4 billion dollars in 2016 (Massolution, 2016). As a consequence, several countries and regulatory authorities have introduced new laws or specific regulations affecting ECF. In this vein, Italy is one of the most important cases, considered of international interest since it is a pioneer in regulating ECF and creating a specific public national registry (Vismara, 2016; Piva and Rossi-Lamastra, 2018; Rossi and Vismara, 2018; Feola *et al.*, 2019).

Research on ECFs is still in its infancy, and scholarly knowledge remains limited and fragmented. Among the promising directions for further advancements in ECF research, the perspective of entrepreneurs is one of the least explored (Mochkabadi and Volkmann, 2018). The literature mainly focuses on investors’ decisions and on campaigns’ success factors (Ahlers *et al.*, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016; Block *et al.*, 2018b; Polzin *et al.*, 2018; Stevenson *et al.*, 2019), while little is known of why entrepreneurs decide to use ECF as they can adopt ECF not only to get financial resources (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018; Wald *et al.*, 2019).

Understanding why entrepreneurs enter in ECF is a relevant idea, even if it is mostly neglected in the literature, as the entrepreneur, his behaviour and what he decides to disclose in an ECF campaign are meaningful factors in improving the campaign’s success (Ahlers *et al.*, 2015; Cholakova and Clarysse, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016, 2018; Block *et al.*, 2018b; Polzin *et al.*, 2018; Stevenson *et al.*, 2019).

We adopted the partial least squares approach to structural equation modelling (PLS-SEM) to try to shed some light on these topics and provide an in-depth analysis of the relationship among the entrepreneur’s characteristics, his motivations and the related behaviours in an ECF campaign. We looked at two well-known entrepreneurial characteristics – entrepreneurial alertness (EA) (Tang *et al.*, 2012; Gaglio and Winter, 2017a, b; Obschonka *et al.*, 2017; Adomako *et al.*, 2018; Roundy *et al.*, 2018; Neneh, 2019; Patel, 2019; Sharma, 2019; Chen *et al.*, 2020) and entrepreneurial self-efficacy (ESE) (Zhao *et al.*, 2005; Günzel-Jensen *et al.*, 2017; Hsu *et al.*, 2017; Mauer *et al.*, 2017; Miao *et al.*, 2017; Schjoedt and Craig, 2017; Brändle *et al.*, 2018; Schmitt *et al.*, 2018; Stroe *et al.*, 2018; McGee and Peterson, 2019; Schmutzler *et al.*, 2019; Shahab *et al.*, 2019) – as both may influence the entrepreneur’s actions and his or her opportunity recognition. These characteristics lead entrepreneurs to define a specific strategy, search for specific elements or satisfy particular needs, such as a lack of knowledge in a field. Therefore, we first explored how they may affect entrepreneurial motivations in terms of what resources entrepreneurs are looking to get out of ECF (e.g. product and market knowledge (PMK), networking resources (NET) or promotion of his or her business idea (PR)) (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018). Second, we considered the influence of these motivations on entrepreneurial behaviours – i.e. which characteristics they choose for their campaigns (both in terms of campaign communication and offerings, respectively CCC and COC) (Lukkarinen *et al.*, 2016) – as they depend on entrepreneurs’ goals and reflect their intentions (e.g. acquiring new market/strategy knowledge, co-creating products, fostering their company’s public awareness or exploiting a crowd network) and

affect the ECF performance. Finally, we looked at how these behaviours may predict ECF performance, i.e. the outcomes of the campaign.

The paper is structured as follows. In the next section, we provide the theoretical background, then we develop the research hypotheses. In the following section, we describe the research methodology used to conduct the study, which includes a description of data and variables. We then present and discuss the findings of our research and their theoretical and practical implications. In the last section we highlight the research limitations and give some suggestions for further research.

Theoretical background

It is well known that EDM influences strategy, and it requires strategic thinking (Vermeulen and Curseu, 2008; Yagnik and Chandra, 2019). Vermeulen and Curseu (2008, p. 16) highlighted the importance of a strategic EDM process and that it leads to the choice of stepwise activity and how these steps are executed to derive a probable desired solution. In this regard, Yagnik and Chandra (2019, p. 11) argued that “decision-making in itself is a strategic activity, which counts for determining a specific course of action to reach the desired strategic goals”.

The EDM process is a complex phenomenon (Shane, 2000). Entrepreneurs have a unique “entrepreneurial mindset”, prompting them to search for the best opportunities to pursue (McGrath and MacMillan, 2000; Sasseti *et al.*, 2019). Entrepreneurial characteristics play a key role in identifying and exploiting opportunities (Ucbasaran *et al.*, 2009). Even the entrepreneurs’ motivations are considered a significant aspect. In fact, entrepreneurial motivations in EDM are meaningful for business success and survival (Baum and Locke, 2004).

At the same time, different entrepreneurs will look at the same situation in different ways, making different evaluations (Shane, 2000; Pellegrini and Ciappei, 2015). Entrepreneurs have to find wisdom under blurred conditions (Pellegrini and Ciappei, 2015, p. 769) when discovering, or defining, a new opportunity (Shane, 2000; Welter and Alvarez, 2015; Bayon *et al.*, 2016) and when they have to make choices (Rosenzweig, 2013).

In recent years, crowdfunding has become a strategic choice for entrepreneurs and a significant alternative to traditional financing systems (Ahlers *et al.*, 2015; Xu *et al.*, 2015; Vulkan *et al.*, 2016). ECF has three main advantages for entrepreneurs: they can make an open call for investors online, limiting an otherwise time-consuming search process (Schwienbacher and Larralde, 2012); they can choose the amount of equity offered to limit their loss of ownership and control (Ahlers *et al.*, 2015; Vismara, 2016) and they can sell to many small investors – i.e. the crowd – instead of few and big ones (Belleflamme *et al.*, 2014; Ahlers *et al.*, 2015).

A growing number of entrepreneurs have started to approach ECF strategically not only to get funds but also to engage the crowd to get publicity and contacts (Macht and Weatherston, 2014; Di Pietro *et al.*, 2018). At the same time, entrepreneurs may exploit ECF to obtain other resources or to fill knowledge gaps (e.g. specific markets or products) (Belleflamme *et al.*, 2014; Schwienbacher, 2018).

Crowdfunding also represents a form of crowdsourcing (Lambert and Schwienbacher, 2010; Schwienbacher and Larralde, 2012; Liu *et al.*, 2016; Di Pietro *et al.*, 2018), where entrepreneurs obtain feedback from the crowd, which can help to develop or test new product/service ideas prior to launch. A large crowd of investors enables entrepreneurs to benefit from the “wisdom of crowds” – i.e. the collective skills and knowledge of the investors (Belleflamme *et al.*, 2014; Polzin *et al.*, 2018) – giving them useful insights.

ECF may be particularly helpful for entrepreneurs without a track record as they are less attractive to traditional investors (e.g. banks, VCs or BAs) (Collins and Pierrakis, 2012).

The crowd creates hype around a business, generates public exposure for it and its products/services and raises awareness (Lambert and Schwienbacher, 2010; Belleflamme *et al.*, 2014; Di Pietro *et al.*, 2018). This may result in more exposure to more investors, facilitating future access to further capital.

In the last few years, ECF has been studied by several scholars. Most of these studies have focused on the drivers of campaigns' success in terms of equity sold and investors involved (Ahlers *et al.*, 2015; Cholakova and Clarysse, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016, 2018; Block *et al.*, 2018b; Polzin *et al.*, 2018; Stevenson *et al.*, 2019); other studies have focused on the choice of determinant campaign characteristics and how they influence investor decisions and, thus, the success of campaigns (Ahlers *et al.*, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016; Vulkan *et al.*, 2016; Block *et al.*, 2018b). Feola *et al.* (2019) specifically explored the Italian ECF scenario and suggested that ECF investors are not similar; in fact, they found four distinct types of investors, characterised by different behaviours in their investment actions ("venture trustful", "crowdfunding technicians", "financial investors, talent scouters" and "social dreamers"). The scholars suggested that entrepreneurs should adopt a marketing perspective in raising capital for their companies and segment potential investors by leveraging specific strategies "aimed to promote investment opportunities to match the diverse investor segments" (Feola *et al.*, 2019, p. 13).

Entrepreneurial motivations drive the choice of campaign characteristics to meet specific goals (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018). Only a few studies have considered that ECF is more than a fundraising tool (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018; Wald *et al.*, 2019). ECF platforms allow the provision of resources, knowledge and services that have become accessible to hundreds of equity funders drawn from a public crowd (Di Pietro *et al.*, 2018), while past research (Gormon and Sahlman, 1989; MacMillan *et al.*, 1989; Macht and Robinson, 2009) shows that these elements derive from the intense private relationships between entrepreneurs and a limited number of experienced professional investors (e.g. VCs and BAs).

The entrepreneurs' perspective and their behaviour before a campaign launch are still not fully studied. Different entrepreneurs may have different characteristics and motivations. Their characteristics affect their decisions whether or not to engage in new contexts (such as an open innovation (OI) context), search for innovations or strategically approach new mechanisms to obtain further resources or input from the crowd by leveraging external knowledge and thus benefiting from external sources of innovation (Ucbasaran *et al.*, 2008; Tang *et al.*, 2012; Du *et al.*, 2016; Di Pietro *et al.*, 2018).

Hypotheses development

Entrepreneurial alertness

EA is central in the EDM process. EA, according to Kirzner (1973, 1979), is the entrepreneur's ability to identify opportunities usually overlooked by others. It is a key feature of the emerging entrepreneurial mindset (Obschonka *et al.*, 2017). Entrepreneurs are open to opportunities (Renko *et al.*, 2012), they are more alert to new entrepreneurial ventures (Busenitz, 1996; Tang *et al.*, 2012) and they are more effective in acknowledging, and exploiting, new opportunities (Shane and Venkataraman, 2000; Maine *et al.*, 2015; Gaglio and Winter, 2017a, b; Neneh, 2019; Sharma, 2019). This opportunity recognition (Wang *et al.*, 2013) builds on a state of heightened alertness to new information, and entrepreneurs pay constant attention to the environment (Lumpkin and Lichtenstein, 2005; Valliere, 2013). Entrepreneurs exhibit high alertness by investigating new opportunities through a continuous search for information and a broad scanning at unconventional times and places (Kaish and Gilad, 1991; Gaglio and Katz, 2001). Ardichvili *et al.* (2003, p. 105) defined EA as "a necessary condition for the success of the opportunity identification triad: recognition, development, and evaluation".

Tang *et al.* (2012) suggested that alert entrepreneurs are likely to increase their companies' innovations since they perceive trends and their consequences more accurately than non-alert ones (Gaglio and Katz, 2001); they are more effective at exploiting external resources and at pursuing new opportunities (Van Den Bosch *et al.*, 1999; Gray, 2006; Patel, 2019; Chen *et al.*, 2020).

Roundy *et al.* (2018) suggested that if decision-makers are entrepreneurially alert they are more ready to make strategic change decisions that lead them to subsequent entrepreneurial opportunities. The scholars argue that EA is influential because alert entrepreneurs make rapid and nimble decisions and are, therefore, more likely to earn first-mover advantages.

Furthermore, EA leads entrepreneurs to be more open and to leverage new tools (Busenitz, 1996; Tang *et al.*, 2012). OI platforms are among the most relevant mechanisms; in fact, more and more entrepreneurs engage in OI contexts (Chesbrough, 2003; Reed *et al.*, 2012; Hsieh *et al.*, 2016; Gomezel and Rangus, 2018) in order to increase opportunities for their firms and their innovations (Bayon *et al.*, 2016). In this vein, OI practices are useful mechanisms for entrepreneurs to leverage external knowledge and to accelerate internal innovation and commercialisation opportunities (Chesbrough, 2003; Du *et al.*, 2016). Di Pietro *et al.* (2018) held that ECF platforms are an important example of OI platforms because entrepreneurs can get both financial resources and support from the wisdom of the crowd; at the same time, the scholars highlighted that entrepreneurs' characteristics influence their motivation to resort to an OI tool like ECF.

Moreover, several studies in the EDM literature have suggested that EA is most salient when decision-makers must respond to a specific scenario or to a disruption in their environment (Hitt *et al.*, 2001; Roundy *et al.*, 2018). In the last few years, ECF has represented a disruptive innovation in funding markets as it shifts the focus to the crowd (Belleflamme *et al.*, 2014; Ahlers *et al.*, 2015; Bruton *et al.*, 2015). Accordingly, many entrepreneurs have started using ECF for their projects as an alternative solution to traditional funding (Kahle and Stulz, 2013; Bruton *et al.*, 2015; Vulkan *et al.*, 2016; Block *et al.*, 2018a).

In line with prior studies, we suggest that EA allows for better entrepreneurial opportunities. In line with this, EA leads entrepreneurs to search for new resources from a new system like ECF and get superior performance. In particular, in ECF a high level of EA should influence the motivation to launch an online call, and it should drive entrepreneurs to search for new useful resources (not only the financial ones) by engaging the crowd. Accordingly, we define our first hypothesis as follows:

H1. EA has positive effects on entrepreneurial motivations to resort to ECF.

Entrepreneurs adopt ECF not only to get financial resources but also to leverage other, more relational resources useful in seizing new opportunities (Ebbbers, 2014). Pryor *et al.* (2016, p. 27) argued that entrepreneurs recognise actual "opportunities and find solutions by defining feedback-seeking and evaluation behaviours".

Alert entrepreneurs will participate in ECF to get several benefits by leveraging external sources from the crowd. EA will lead entrepreneurs to search for product co-creation activities – e.g. getting feedback or suggestions from the crowd to develop more customised products/services or involving investors as testers – or receive market advice – i.e. getting insights from the crowd about market trends, potential competitors or partners and so on (Di Pietro *et al.*, 2018).

Alert entrepreneurs are more likely to search for more connections (Adomako *et al.*, 2018) and exploit a crowd-network (Di Pietro *et al.*, 2018). Active participation in the ECF mechanism gives entrepreneurs the opportunity to grow their networks since the investors will help build the company's network, creating new connections with external stakeholders (Di Pietro *et al.*, 2018). Moreover, a high number of connections positively increase the probability of receiving outside financing (Vismara, 2016).

Finally, EA induces entrepreneurs to improve the promotion of their business and search for external resources to foster it. Thus, entrepreneurs leverage a crowd's contacts to promote their businesses and improve word of mouth. Furthermore, they enhance their company's external visibility through crowd ambassadors, who increase public awareness by acting as marketing channels (Di Pietro *et al.*, 2018).

To understand these different effects, in this study we investigated the relationship between EA and each of the three categories of entrepreneurial motivation – PMK, NET and PR – and have therefore defined the following sub-hypotheses:

H1a. EA has a positive effect on searching for PMK from an ECF campaign.

H1b. EA has a positive effect on searching for NET from an ECF campaign.

H1c. EA has a positive effect on searching for PR from an ECF campaign.

Entrepreneurial self-efficacy

ESE is a specific form of self-efficacy (Chen *et al.*, 1998) affecting an entrepreneur's choice of activities, goals and performance (Zhao *et al.*, 2005). It has been studied in many fields, particularly social psychology, to explain human behaviours, motivations and performance (Gist and Mitchell, 1992; Bandura, 1997; Mauer *et al.*, 2017), and it plays an influential role in determining choices, level of effort and perseverance (Chen *et al.*, 2004).

Over the years, interest in ESE has grown significantly in the field of entrepreneurship, particularly EDM (Günzel-Jensen *et al.*, 2017; Brändle *et al.*, 2018; Schmitt *et al.*, 2018; Stroe *et al.*, 2018; Schmutzler *et al.*, 2019; Shahab *et al.*, 2019). In fact, the literature on entrepreneurship highlights several studies that leveraged ESE to explore entrepreneurial success/failure or firm performance (Hsu *et al.*, 2017; Miao *et al.*, 2017; Schjoedt and Craig, 2017; McGee and Peterson, 2019).

ESE has been seen as a predictor of entrepreneurial intentions and a useful element in driving toward creating new entrepreneurial activities (Zhao *et al.*, 2005; Barbosa *et al.*, 2007; McGee *et al.*, 2009). Chen *et al.* (1998, p. 295) reported that “ESE refers to the strength of a person's belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship. It consists of five factors: marketing, innovation, management, risk-taking, and financial control”.

ESE is linked to how an entrepreneur perceives his or her own capability to accomplish a task (Bandura, 1986; Lindsley *et al.*, 1995); it produces its effects through motivational processes (Bandura, 1977). Chen *et al.* (1998) suggested that ESE can be used to identify several reasons for entrepreneurial avoidance, i.e. not engaging in specific contexts or mechanisms. Forbes (2005) argued that the level of ESE affects the extent of entrepreneurs' comprehensive decision-making. Entrepreneurs with a high level of ESE do not search for new input, such as for marketing or innovation.

ESE leads to optimism, and entrepreneurs with high ESE hold strong beliefs in their entrepreneurial abilities (Krueger and Brazeal, 1994; Chen *et al.*, 1998; Ardichvili *et al.*, 2003; Forbes, 2005). Accordingly, we assume that high levels of ESE will have a negative impact on entrepreneurial motivation to use ECF as a way to get new (but not financial) resources – the entrepreneur's confidence in his capabilities will hinder the opportunity identification process and work against the search for new inputs (Zhao *et al.*, 2005; Drnovšek *et al.*, 2010). Accordingly, we define our second hypothesis as follows:

H2. ESE has a negative impact on entrepreneurial motivations to resort to ECF.

Entrepreneurs with high ESE do not aim to leverage an OI mechanism like ECF to get crowd input since they do not consider them of primary importance and prefer to rely on their own knowledge (Ucbasaran *et al.*, 2008). We suggest that the higher the ESE level, the lower the

level of ECF use by the entrepreneur to obtain new crowd input on each of the three dimensions of entrepreneurial motivation (PMK, NET and PR). A high level of ESE, in fact, could lead entrepreneurs to avoid asking the crowd for new knowledge on products or markets, to avoid leveraging funders to grow their networks and to not exploit them in promoting the company and its products/services. Accordingly, we define three sub-hypotheses as follows:

H2a. ESE has a negative effect on searching for PMK from an ECF campaign.

H2b. ESE has a negative effect on searching for NET from an ECF campaign.

H2c. ESE has a negative effect on searching for PR from an ECF campaign.

Entrepreneurial motivations to use ECF

Several studies have explored investors' motivations to use ECF (Ahlers *et al.*, 2015; Cholakova and Clarysse, 2015; Block *et al.*, 2018b; Polzin *et al.*, 2018), while entrepreneurs' ones are still less investigated (Mochkabadi and Volkmann, 2018). According to several scholars (Belleflamme *et al.*, 2014; Estrin *et al.*, 2018), even if the main reason to use ECF is to get financial resources, there are other motivations, such as getting known, getting feedback and several other advantages to help company growth and development. These studies have shown that ECF allows entrepreneurs to test their products, develop their brand and build a loyal customer base, while turning customers into investors.

Di Pietro *et al.* (2018) studied ECF platforms as OI platforms and found that those companies exploiting the crowd network – to get input on products, strategies and other market knowledge – were more successful than the others.

Wald *et al.* (2019) examined non-financial benefits of ECF campaigns and found that the crowd could offer entrepreneurs both inward benefits (investors' experiences and expertise) and outward benefits (public exposure and investor recruitment).

In this study we propose that entrepreneurs leverage ECF as a way to get access to various useful resources (Barney, 2001; Meyer, 2019). Lukkarinen *et al.* (2016) argued that as a campaign's characteristics can be predetermined by the entrepreneur prior to the campaign, they are related to entrepreneurs' motivations and goals. Accordingly, entrepreneurs disclose and define the campaign characteristics based on their specific motivations, so we define our third hypothesis as follows:

H3. Entrepreneurial motivations affect the choice of campaign characteristics.

Consistent with the previous literature (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018), we focus on several key parameters: the acquisition of new knowledge on products and markets (e.g. feedback on products or internationalisation strategies), the improvement of networking resources (to become more connected with other relevant stakeholders or improve the usefulness of their contacts) and more effective business promotion (leveraging the crowd as business ambassadors or as a source of positive word of mouth). We assume that entrepreneurial motivations determine ECF campaign characteristics both in terms of CCC (social networks, images and updates) and COC (equity offered and funding target).

We hypothesise that non-financial motivations negatively influence COC, as entrepreneurs set a lower target (i.e. equity offered and funding target) to engage a large number of small investors (Vismara, 2016). Accordingly, we define the following three sub-hypotheses:

H3a. PMK motivations have a negative effect on COC.

H3b. NET motivations have a negative effect on COC.

H3c. PR motivations have a negative effect on COC.

However, we expect a positive impact for CCC, as PMK, NET and PR lead entrepreneurs to post more information, more updates and/or more images and the links to their social network profiles to deeply engage the crowd (Bretschneider and Leimeister, 2017; Block *et al.*, 2018b). Entrepreneurs leverage several tools and disclose some specific elements useful to improve crowd knowledge (Ahlers *et al.*, 2015; Vismara, 2016; Block *et al.*, 2018b). Therefore, we propose the following three sub-hypotheses:

H3d. PMK motivations have a positive effect on CCC.

H3e. NET motivations have a positive effect on CCC.

H3f. PR motivations have a positive effect on CCC.

Campaign characteristics

In the academic literature, several campaign characteristics have been used as predictors of ECF success (Ahlers *et al.*, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016; Vulkan *et al.*, 2016; Block *et al.*, 2018b; Polzin *et al.*, 2018). Among them, Vulkan *et al.* (2016) compared ECF and reward crowdfunding, while Lukkarinen *et al.* (2017) suggested that the crowd does not adopt the same investment decision criteria used by VCs or BAs. This latter study also showed that ECF performance is related to pre-selected crowdfunding campaign characteristics and the utilisation of private and public networks selected by entrepreneurs.

The choice of campaign characteristics is a typical behaviour of entrepreneurs, and it plays a key role in increasing the probability of a successful ECF campaign (Vismara, 2016). In particular, entrepreneurs decide how much information about their business communicates and the media to adopt in order to satisfy the crowd's needs and attract them to the campaign. These choices are fundamental for entrepreneurs to communicate the quality of their business to investors and provide them with credible signals (Ahlers *et al.*, 2015; Vismara, 2016). Choosing the right campaign characteristics helps to mitigate information asymmetries, and it improves investors' knowledge of the business and their willingness to invest in it (Ahlers *et al.*, 2015). Accordingly, we have defined our fourth hypothesis as follows:

H4. The campaign characteristics chosen by the entrepreneur affect the ECF performance.

In this study, we consider both CCC and COC. The choice of the campaign characteristics is strongly related to the decision-making process of the entrepreneur (Belleflamme *et al.*, 2014; Lukkarinen *et al.*, 2016). Entrepreneurs, in fact, are free to decide the type of CCC and COC to disclose as he or she tries to attract investors (Belleflamme *et al.*, 2014; Vismara, 2016).

According to Dorfleitner *et al.* (2018, p. 524), CCCs are typically "entrepreneurial behaviours in crowdfunding campaigns" and "this strategic communication behaviour can help investors to optimise their investment decisions".

The success of campaigns depends significantly on how the campaign is run and on the decisions of the entrepreneurs (Lukkarinen *et al.*, 2016, p. 36). Entrepreneurs decide to send specific types of information or signals (Herbig, 1996) to investors and decide what they want to reveal to them (Belleflamme *et al.*, 2014; Ahlers *et al.*, 2015; Vismara, 2016). In this vein, entrepreneurs should strategically decide the factors he or she discloses within the campaigns, i.e. CCC and COC. The behaviour of decision-makers plays a key role in the online context of crowdfunding platforms (Koch and Siering, 2019). Entrepreneurs' decision-making behaviour is a highly relevant driver of ECF campaigns, able to affect their performance.

The first category, i.e. CCC, is focused on presenting the business and its products/services, as well as on the presenting the entrepreneurs. Entrepreneurs may leverage several

tools for CCC, such as social networks (e.g. Facebook and LinkedIn), images and updates, to influence investors (Mollick, 2014; Chan and Park, 2015; Block *et al.*, 2018b).

The choice of CCCs is an entrepreneurial decision on the type and number of images or updates to post on online campaigns, as well as the type of social networks to leverage, such as LinkedIn, Facebook and so on. The choice of these parameters represents a specific development strategy. Social networks are strategic tools for crowd engagement (Sashi, 2012), and entrepreneurs have to manage several social networks in order to tap into a wide range of people (Keegan and Rowley, 2017). They are well-known elements that help entrepreneurs to spread information (Mollick, 2014; Colombo, 2015), overcome information asymmetries and obtain superior performance in ECF (Vismara, 2016). In fact, prior studies have highlighted that entrepreneurs' connections on social networks are positively related to funding collected and investors attracted.

In crowdfunding, updates are a way to let entrepreneurs disclose specific types of information during the campaign. Dorfleitner *et al.* (2018, p. 523) argued that entrepreneurs “can voluntarily communicate with their investors by posting updates” and “entrepreneurs use voluntary disclosure strategically”. Entrepreneurs strategically engage in updates in order to inform the crowd about new business developments. Updates are an added value for investors, and they positively influence crowd participation. Mollick (2014) found that the number of updates and their timing are a proxy of campaign success.

Entrepreneurs also determine the type and the number of images to include in their initiatives or business plans to display their perspective on their products and/or services (Chan and Park, 2015). Images are useful in attracting investors and influence people's cognition and online behaviour. In fact, accessible and relevant images (e.g. products, business activities or prototypes) affect investment screening decisions and increase favourable judgments.

The second category, i.e. COC, includes both the equity offered and funding targets pre-determined by entrepreneurs. They choose the amount of equity offered, i.e. how much equity shares they intend to sell (Ahlers *et al.*, 2015; Vismara, 2016), and the campaign's goal, i.e. how much funds they aim to raise (Lukkarinen *et al.*, 2016; Vulkan *et al.*, 2016). These specific parameters level is part of the entrepreneurs' strategic decision-making process and they may influence the business strategy (Francioni *et al.*, 2015). Entrepreneurs decide if and how much to invest in their initiatives through equity retention (Leland and Pyle, 1977; Ahlers *et al.*, 2015; Vismara, 2016). The amount of equity offered is related to their decision about the control and ownership of their companies (Macht and Weatherston, 2014). Prior studies (Ahlers *et al.*, 2015; Vismara, 2016, 2018; Vulkan *et al.*, 2016) have shown that a good indicator of entrepreneur's degree of commitment is the equity offered. These studies showed negative impacts of the amount of equity offered on ECF performance (Ahlers *et al.*, 2015; Vismara, 2016, 2018; Vulkan *et al.*, 2016), as it is usually seen as a negative signal as it highlights a lower commitment by entrepreneurs (Vismara, 2016), that they are less optimistic and are not confident about their company's capability to generate positive cash flow (Ahlers *et al.*, 2015; Vismara, 2016). Contrariwise, equity retention is a positive signal of entrepreneurs' commitment (Leland and Pyle, 1977). As Vismara (2016, p. 583) argued, entrepreneurs signal their commitment through high ownership retention, thus “potential investors will perceive this behaviour as a quality signal.”

Entrepreneurs who engage in ECF also decide the funding target in online campaigns and indicate a specific amount to collect. They, in fact, set a goal for minimum target funding (Lukkarinen *et al.*, 2016) that is related to their funding needs and their strategic decisions about their company's development.

The funding target is another indicator defined by the entrepreneur (Lukkarinen *et al.*, 2016; Vulkan *et al.*, 2016); the higher it gets the more difficult it is for the campaign to be

successful. A higher funding target is negatively related to a campaign's success (Mollick, 2014; Zheng *et al.*, 2014); in fact, it represents a limit for several projects aiming for a high target and having more difficulties collecting the needed funding. This is an even more relevant constraint on platforms operating with the AON (all or nothing) model, like most ECF ones, where companies do not keep any of the pledged funds if they do not meet their funding goal.

In line with prior studies, we expected to find a positive relationship between CCC and ECF performance since a higher number of updates, images and social connections should predict the success of campaigns.

Contrariwise – consistent with previous studies – pre-selected COC should negatively affect ECF performance since both a larger percentage of equity offered by entrepreneurs and a higher funding target will reduce the likelihood of a campaign's success. Hence, the literature leads to our fourth hypotheses, as follows:

H4a. CCC has a positive effect on ECF performance.

H4b. COC has a negative effect on ECF performance.

The following Figure 1 reports the final structure of the presented hypotheses with the constructs and the hypotheses.

Research method

Context

This study focuses on ECF in Italy, the first country in Europe to define a specific regulation for ECF (Decreto Legge n. 179/2012 or Decreto Crescita Bis); moreover, Consob (Commissione Nazionale per le Società e la Borsa) created a national registry for ECF operators (Vismara, 2016; Rossi and Vismara, 2018). The Italian ECF market is rapidly growing, in terms of collected funding (more than 82.3 million euros (as of June 2019, 30th)), campaigns launched (over 400) and their success rate (about 55%) (Politecnico di Milano, 2019). The Italian context is a vibrant case for ECF, and its policy-makers are vigilant in improving ECF regulations (e.g. a new regulation requires entrepreneurs to sell a minimum 5% of equity to professional investors, banks or innovative start-up incubators). Several studies have focused on ECF in Italy, such as Piva and Rossi-Lamastra (2018), who examined the effects of human capital signals on entrepreneurs' success, and Feola *et al.* (2019), who segmented the Italian ECF investors' market to investigate differences between segments and explore the investors' drivers when selecting investment proposals. These reasons led us to focus on Italy, a growing ecosystem rich in ECF innovation.

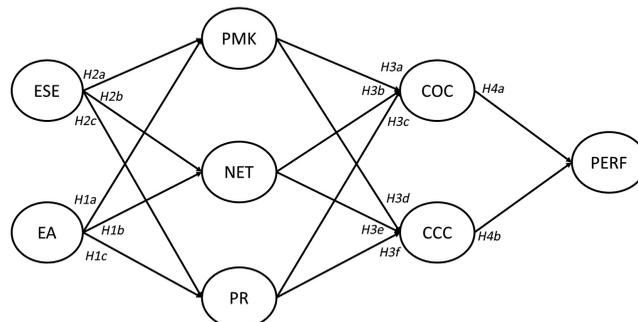


Figure 1. Proposed model linking entrepreneurs characteristics, motivations, and their behaviour in the ECF campaign to ECF performance

Data collection and sample

In the public national registry for ECF operators, we found 33 authorised ECF portals (Politecnico di Milano, 2019), though only 12 were eligible for this study as they were active and not specialised in real estate. We collected data on all the campaigns that ended before September 2019. The related data are shown in Table 1.

We used an online survey to collect data on entrepreneurs' EA, ESE and motivations to use ECF, using scales previously validated in the academic literature. A pilot version of the survey was administered to a small number of ECF entrepreneurs to collect their feedback on each single measure, the questions' wording and their familiarity with the survey topics (Podsakoff *et al.*, 2012). This feedback drove us to group the motivations into three main dimensions: PMK, NET and PR.

We administered the survey using both emails and LinkedIn, and the data collection lasted eight weeks, from July to September, with two reminders sent to increase the number of participants.

In total, we surveyed 368 companies on the 12 valid ECF platforms; the questionnaire was answered by 122 entrepreneurs (33.15% answer rate), but we had to delete 25 questionnaires as they were incomplete. Thus, we had a final sample size of 97 companies (26.36% of the companies – 97 out of 368). The survey sample included both successful (81%) and failed projects (19%). About 77% of companies were start-ups and 23% were small- and medium-sized enterprises (SMEs), while about 65% belonged to the service industry. We made a data check through official business register databases (e.g. Register of Innovative Start-ups/SMEs) and the major search engine and start-up information sites (crunchbase, AngelList etc.) to better identify the type (whether a start-up or an SME) and sector (according to the Ateco classification) of each company.

The data on each campaign characteristic and ECF performance were hand-collected. In particular, we collected information about the COC (such as the amount of equity offered and target capital), the CCC (such as updates, images or links to their social network profiles) and the ECF outcomes (such as success of fundraising, the final percentage of funding collected, the number of final investors involved and the final capital collected, in euros).

To check for potential non-response bias, we conducted a wave analysis (Zollo *et al.*, 2017, 2019) comparing the respondents in the three periods on several variables relevant in the literature and on the following performance variables: start-up status and type of company (service or not). The *t*-tests found no statistically significant differences between the three groups; for example, for the type of company (i.e. the proportion of service companies in the group) the *p*-value between the first and the second wave was 0.58, between the first and the

ECF platform	Date of authorisation	No. Campaigns	% In sample
200crowd (formerly TIP Ventures)	06/18/2014	35	34.3 %
Action Crowd (formerly Assitecacrowd)	02/06/2014	5	20 %
BackToWork24 (formerly Equinvest)	01/14/2015	39	43.6 %
CrowdFundMe	07/30/2014	79	30.4 %
Fundera	09/10/2014	1	100 %
In-vestire	01/28/2015	2	50 %
Mamacrowd	08/06/2014	71	21.1 %
MuumLab	08/06/2014	6	33.3 %
NextEquity	07/16/2014	10	20 %
Opstart	11/11/2015	51	17.7 %
StarsUp	10/18/2013	43	18.6 %
WeAreStarting	12/16/2014	26	19.2 %

Table 1.
ECF platforms and
campaigns

third wave it was 0.54 and between the first and the second it was 0.95. Accordingly, the non-responder bias was not an issue in our data sampling.

Measures

In order to measure EA and ESE, we used the scales previously validated by [Tang et al. \(2012\)](#) and [Zhao et al. \(2005\)](#), respectively. The EA scale is divided into three dimensions for a total of 13 items (six for scanning and searching for information (SS), three for association and connection (AC) and four for evaluation and judgement (EJ)) ([Tang et al., 2012](#)). According to [Tang et al. \(2012\)](#), SS improves the entrepreneurs' knowledge ([Dimov and Shepherd, 2005](#)) and offers them multiple possibilities ([Kirzner, 1979](#)); it favours their investigations ([Busenitz, 1996](#)). More extensive SS helps in enhancing alertness to business opportunities ([Ericsson et al., 1993](#)). AC has a key role in allowing entrepreneurs to move out of the routine and innovate ([Gaglio and Katz, 2001](#)). It is the dimension used to receive and process new information to make unique connections. EJ refers to the identification of profitable business opportunities and judgement of the potential of new information to match it with existing ideas or prototypes ([Baron, 2006](#)). The judgments of these opportunities and their related actions represent a central element of EA ([McMullen and Shepherd, 2006](#)). In this study we adopted this tri-partition and assumed that the three dimensions have a key role in the EDM process.

The ESE scale was developed by [Zhao et al. \(2005\)](#), identifying four central items (new business opportunities, creating new products, thinking creatively and commercialising an idea or new development). The entrepreneurial motivation construct, based on previous studies ([Di Pietro et al., 2018](#); [Estrin et al., 2018](#)), evaluated the relative importance of several potential inputs as a valid motivation to use ECF. All the items were measured on a five-point Likert Scale. Because the original scales were in English, we followed standard translation and back-translation procedures to get the Italian versions ([Saunders and Lewis, 2012](#)).

In order to reduce the method biases ([Podssakof et al., 2012](#)), we collected the campaign characteristics directly from the ECF platforms instead of asking them of the entrepreneurs. We collected the number of updates ([Mollick, 2014](#); [Block et al., 2018b](#); [Dorfleitner et al., 2018](#)), the number of images ([Chan and Park, 2015](#); [Bretschneider and Leimeister, 2017](#)) and the entrepreneurs' social networks presence ([Mollick, 2014](#); [Vismara, 2016](#)), as indicators related to CCC. We also measured COC using the equity offered in percentage and the target amount of funding ([Ahlers et al., 2015](#); [Lukkarinen et al., 2016](#); [Vismara, 2016, 2018](#); [Vulkan et al., 2016](#)).

Finally, we measured ECF performance using three commonly used proxies: the final percentage of funding collected, the final number of investors and the total funds collected ([Ahlers et al., 2015](#); [Lukkarinen et al., 2016](#); [Vismara, 2016, 2018](#)). The final percentage of funding collected was a more fine-tuned measure of ECF success when the fundraising exceeded the target goal, and it may have measured its failure when the fundraising did not reach the target goal ([Vismara, 2016, 2018](#)). The final number of investors was a count variable and indicated the crowd participation in terms of numbers of investors involved at the end of a campaign ([Ahlers et al., 2015](#); [Vismara, 2016](#)). This was an important measure of success, as the main logic to adopt the crowdfunding is to accumulate a large number of investors, a crowd ([Vismara, 2016](#)). The last variable, funds collected, indicated the total funding that was generated by a project (in thousands of euros) ([Ahlers et al., 2015](#); [Vismara, 2018](#)). It is a common proxy of ECF success and measured the amount of capital raised at the end of a campaign.

The constructs and the related items are reported in [Table 2](#).

Data analysis

We tested our model using PLS-SEM ([Hair et al., 2011](#)) with R-CRAN with the package `plspm` ([Sanchez et al., 2017](#)), for the model evaluation, and with the `semnr` package for the related

Constructs	Components	Example item	References
Entrepreneurial Alertness (EAs)	Alert scanning and search (SS)	I am an avid information seeker	Tang et al. (2012)
	Alert association and connection (AC)	I am good at “connecting dots”	
	Evaluation and judgment (EJ)	I have a gut feeling for potential opportunities	
Entrepreneurial Self-Efficacy (ESE)	Identify new business opportunities, create new products, thinking creatively, and commercialising an idea or new development	I’m confident I’m successful at creating new products	Zhao et al. (2005)
Entrepreneurial Motivations	Market knowledge (PMK)	In ECF I look for getting market trends insights	Di Pietro et al. (2018)
	Networking (NET)	In ECF I look for connections with key industry players	
	Promotion (PR)	In ECF I look for backers acting as marketing channels	
Campaigns Characteristics	Campaigns’ communication characteristics (CCCs)	# of Images posted	Mollick (2014) ; Ahlers et al. (2015) ; Vismara (2016, 2018) ; Lukkarinen et al. (2016) ; Vulkan et al. (2016)
	Campaigns’ offerings characteristics (COC)	% of equity offered	
ECF Performance		% funding collected Funds collected (in thousand €) # investors	Ahlers et al. (2015) ; Lukkarinen et al. (2016) ; Vismara (2016, 2018) ; Vulkan et al. (2016)

Table 2.
Constructs and items

tests ([Ray et al., 2019](#)). PLS-SEM has already been used in several studies on strategic management ([Hulland, 1999](#); [Sarkar et al., 2001](#)), entrepreneurial orientation ([Shehu and Mahmood, 2014](#); [Pratono and Mahmood, 2015](#)), digital platforms ([Cenamor et al., 2019](#)) and, more specifically, crowdfunding ([He et al., 2016](#); [Zheng et al., 2017](#); [Sahaym et al., 2019](#)).

The choice to adopt this particular approach to SEM, instead of the traditional covariance-based one, was also supported by several theoretical motivations. Our study is among the first to study how entrepreneurs’ characteristics and behaviour is linked to campaigns’ characteristics and success, so its purpose is mostly exploratory ([Hair et al., 2014](#)); moreover, our focus was on the relationship between the constructs, not on the best model to represent a given reality ([Hair et al., 2011](#)). Finally, in our case the PLS-SEM approach was the suggested approach as it did not rely on any distributional assumption of the measured variables ([Henseler et al., 2009](#); [Reinartz et al., 2009](#)).

The model was tested for common method bias (CMB) with the full-collinearity approach ([Kock and Lynn, 2012](#); [Kock, 2015](#)). According to this method, there is no significant risk of CMB if the latent VIFs are lower than the suggested limit of 3.3. In our case we found no latent VIF higher than the suggested limit, and the highest value was 2.05 for the NET construct; it followed that CMB was unlikely to be a significant threat in our case.

At the same time, the evaluation of PLS-SEM did not rely on any distributional assumption of the variables, and it did not evaluate a global fit measure to assess the model validity; so several authors ([Chin, 1998](#); [Henseler et al., 2009](#); [Hair et al., 2016](#); [Ravand and Baghaei, 2016](#)) hold the need to study the data using a two-step approach: (1) quality of the

outer (measurement) model and (2) assessment of the inner (structural) model predictive power.

Measurement model

The assessment of the measurement model for reflective indicators in PLS was done by looking at four indicators:

- (1) Indicator reliability – Items' factor loading on their latent higher than 0.6 (Chin, 1998; Henseler *et al.*, 2009).
- (2) Construct reliability – Constructs' Dillon–Goldstein's rho (Chin, 1998) higher than 0.7; for each construct, the first Eigenvector is higher than 1 and the second Eigenvector is lower than 1 (Tenenhaus *et al.*, 2005).
- (3) Convergent validity – Average variance extracted (AVE) (Hair *et al.*, 2016) higher than 0.50.
- (4) Discriminant validity – Items factor loading on their latent variable higher than the cross-loadings on the other constructs (Ravand and Baghaei, 2016).

In our case some items had a factor loading lower than 0.6 (namely SS1, SS3, SS4, ESE4, NET2, PR3 and Y3) and, given the exploratory nature of our study, we decided to delete them and re-run the test (Hulland, 1999; Hair *et al.*, 2016). As shown in Tables 3 and 4, this second run passed the four tests.

Hypotheses testing

To assess the quality of the structural model, we looked (Hair *et al.*, 2016) at the structural path coefficients defined with a bootstrap with 5,000 resamples and confirmed the related predicting power of the constructs using R^2 . The related data are reported in Table 5 and Figure 2.

We found support for several of our hypotheses (namely H1b, H1c, H2a, H2b, H3a, H3e, H3f, H4a and H4b). We found support for H1b and H1c showing that EA drives entrepreneurs to use ECF both to create a bigger network of relationships (factor loading = 0.187*) and to exploit these new connections in promoting their business (factor loading = 0.261*).

We found support for the negative relationship between ESE and both the motivation to leverage investors' feedback to improve products or strategies (factor loading = -0.229**) and to exploit the new relationship to widen the network the enterprise is embedded into (factor loading = -0.253**).

Looking at the direct effects of entrepreneurs' motivations on campaign characteristics, we found support for the hypotheses linking PMK to COC (factor loading = -0.176*) and PR to CCC (factor loading = 0.307*), while NET had a significantly negative impact on CCC (factor loading = -0.348**), though we expected to find a positive one.

Finally, looking at the impact of campaigns' characteristics on ECF performance, we found a negative impact of COC on ECF performance (factor loading = -0.210**) and a positive one for CCC (factor loading = 0.484***), which confirms the related literature.

At the same time, we have found our model only had a limited predicting power for the different campaign characteristics (the R^2 of all these variables was lower than 0.1), but it showed a moderate predicting power for the campaign performance (R^2 of PERF is 0.32).

Discussion

EDM processes in the ECF field are still largely unexplored, and the perspective of entrepreneurs is still not fully understood (Mochkabadi and Volkmann, 2018). In this paper,

Construct	Item	Loading	DG.rho	eig.1st	eig.2nd	AVE
SS	SS2	0.68	0.80	1.79	0.95	0.57
	SS5	0.71				
	SS6	0.87				
AC	AC1	0.76	0.85	1.94	0.66	0.63
	AC2	0.83				
	AC3	0.80				
EJ	EJ1	0.83	0.87	2.52	0.79	0.63
	EJ2	0.83				
	EJ3	0.82				
	EJ4	0.70				
ESE	ESE1	0.75	0.86	2.04	0.54	0.68
	ESE2	0.83				
	ESE3	0.88				
PMK	PMK1	0.72	0.89	3.03	0.69	0.60
	PMK2	0.83				
	PMK3	0.74				
	PMK4	0.81				
	PMK5	0.80				
NET	NET1	0.76	0.85	1.95	0.65	0.63
	NET3	0.93				
	NET4	0.69				
	PR1	0.82				
PR	PR2	0.92	0.87	1.52	0.48	0.76
	COC1	0.86				
COC	COC2	0.87	0.83	1.43	0.57	0.72
	CCC1	0.88				
CCC	CCC2	0.73	0.79	1.31	0.69	0.65
	PERF	Y1				
	Y2	0.93				

Table 3.
Validity and reliability
evidence

Note(s): *Values were computed after deleting indicators with low loadings

we looked into EDM to improve the current knowledge on this topic, and we have tried to shed some light on the importance of entrepreneurial characteristics, motivations and behaviours in this field. This paper contributes to the current literature on EDM and ECF.

Recently, there has been increasing interest in understanding ECF as both its volume and the number of entrepreneurs who use it are growing exponentially (Massolution, 2016; Technavio, 2018; Politecnico di Milano, 2019). Existing studies have enhanced our understanding of ECF performance and investors (Ahlers *et al.*, 2015; Lukkarienen *et al.*, 2016; Vismara, 2016, 2018; Vulkan *et al.*, 2016; Block *et al.*, 2018b; Polzin *et al.*, 2018; Feola *et al.*, 2019), yet the research on entrepreneurs is at its infancy; further research has been suggested to develop a solid understanding about EDM in this specific context and how entrepreneurs use this new system.

Theoretical implications

Our study focused on entrepreneurs and, therefore, we looked at entrepreneurial characteristics underlying EDM. We distinguished two well-known types of entrepreneurial characteristics, EA and ESE. Then we focused on entrepreneurial motivations in terms of PMK, PR and NET. Finally, we looked at two classes of campaign characteristics (COC and CCC).

Our findings highlight that both entrepreneurial characteristics have a significant impact on motivations in adopting ECF. EA positively influences both NET and PR, confirming, at

Item	Construct	SS	AC	EJ	ESE	PMK	NET	PR	COC	CCC	PERF
SS2	SS	<i>0.68</i>	0.30	0.44	0.12	-0.07	0.01	0.04	0.06	0.03	0.02
SS5	SS	<i>0.71</i>	0.17	0.07	-0.28	0.16	0.28	0.18	-0.05	-0.13	0.11
SS6	SS	<i>0.87</i>	0.20	0.19	-0.18	0.09	0.14	0.10	0.01	-0.09	0.06
AC1	AC	0.15	<i>0.76</i>	0.21	0.19	-0.07	-0.15	-0.11	-0.05	0.02	0.13
AC2	AC	0.36	<i>0.83</i>	0.58	0.11	0.10	0.06	0.15	-0.22	0.13	0.19
AC3	AC	0.16	<i>0.80</i>	0.36	0.18	0.07	0.07	0.04	-0.15	-0.01	0.15
EJ1	EJ	0.27	0.49	<i>0.83</i>	0.15	0.07	0.06	0.08	-0.05	-0.12	0.12
EJ2	EJ	0.33	0.36	<i>0.83</i>	0.07	0.10	0.08	0.29	0.02	-0.07	0.21
EJ3	EJ	0.33	0.32	<i>0.82</i>	0.02	0.12	0.15	0.33	-0.07	-0.04	0.21
EJ4	EJ	0.11	0.52	<i>0.70</i>	0.18	-0.05	-0.05	0.03	-0.14	0.18	0.23
ESE1	ESE	-0.03	0.16	0.08	<i>0.75</i>	-0.16	-0.16	-0.04	0.14	0.03	-0.10
ESE2	ESE	-0.08	0.15	0.19	<i>0.83</i>	-0.17	-0.17	-0.06	-0.04	-0.08	0.02
ESE3	ESE	-0.16	0.16	0.06	<i>0.88</i>	-0.17	-0.23	-0.15	0.12	-0.14	-0.12
PMK1	PMK	-0.04	0.09	0.17	-0.07	<i>0.72</i>	0.49	0.32	-0.12	-0.04	0.07
PMK2	PMK	0.16	0.09	0.19	-0.11	<i>0.83</i>	0.38	0.47	-0.19	0.05	0.07
PMK3	PMK	0.02	0.07	-0.02	-0.18	<i>0.74</i>	0.50	0.43	-0.19	0.00	-0.05
PMK4	PMK	0.05	-0.03	-0.05	-0.25	<i>0.81</i>	0.56	0.48	-0.14	0.06	0.00
PMK5	PMK	-0.02	0.02	0.03	-0.17	<i>0.80</i>	0.48	0.42	-0.18	0.03	0.00
NET1	NET	0.06	-0.06	0.06	-0.15	0.53	<i>0.76</i>	0.62	-0.13	0.04	0.02
NET3	NET	0.15	0.02	0.07	-0.24	0.50	<i>0.93</i>	0.53	-0.18	-0.14	0.00
NET4	NET	0.20	0.06	0.06	-0.12	0.48	<i>0.69</i>	0.48	0.02	-0.07	0.04
PR1	PA	0.15	0.03	0.25	-0.06	0.46	0.52	<i>0.82</i>	-0.06	0.12	0.13
PR2	PA	0.10	0.07	0.18	-0.13	0.50	0.60	<i>0.92</i>	-0.22	0.13	0.25
COC1	COC	-0.02	-0.21	-0.03	0.01	-0.22	-0.14	-0.16	<i>0.86</i>	-0.11	-0.18
COC2	COC	0.05	-0.12	-0.08	0.14	-0.15	-0.11	-0.14	<i>0.87</i>	-0.28	-0.36
CCC1	CCC	0.02	0.05	-0.02	-0.15	0.05	-0.09	0.18	-0.16	<i>0.88</i>	0.44
CCC2	CCC	-0.19	0.07	-0.03	0.04	-0.01	-0.07	0.02	-0.23	<i>0.73</i>	0.42
Y1	PERF	0.03	0.18	0.19	-0.01	0.06	0.03	0.26	-0.33	0.48	<i>0.94</i>
Y2	PERF	0.12	0.21	0.25	-0.16	-0.01	-0.01	0.18	-0.28	0.51	<i>0.93</i>

Table 4.
Discriminant validity

Note(s): Legend: Values in *italics* Item factor loading on their latent; Values in roman: Item cross-loading on the construct in the column's heading

least in part, some previous studies (e.g. [Vismara, 2016](#); [Di Pietro et al., 2018](#)). This agrees with some scholars ([Gaglio and Katz, 2001](#); [Tang et al., 2012](#)) who hold that EA allows entrepreneurs to identify new opportunities ([Gaglio and Winter, 2017a](#); [Roundy et al., 2018](#); [Patel, 2019](#)), which leads them to leverage the crowd to improve their networking capabilities ([Ebbbers, 2014](#); [Adomako et al., 2018](#)). This is done not only to get access to more networks but also to engage the crowd in promoting their business, further helping them gain access to new relationships. Our model supports the idea that EA allows entrepreneurs to be more sensitive and vigilant to the environment and drives them to interact with other players to discover new opportunities ([Ardichvili et al., 2003](#)).

Our data support the idea that ESE, however, reduces the perceived need for external inputs, not only for their products or the markets they are targeting (as expected from several studies) ([Zhao et al., 2005](#); [Drnovšek et al., 2010](#)) but also for their networking capabilities. This highlights the idea that the more entrepreneurs are focused on their capabilities the less they will look for talent from the outside.

Moreover, our study suggests that both the entrepreneurial characteristics we have considered are needed to explain the three classes of entrepreneurial motivations, even if the low R^2 highlights the need to study these topics more.

Our results show that an entrepreneur's motivation can have a meaningful impact on the characteristics the entrepreneur chooses for their ECF campaign. As expected, when the entrepreneur starts a campaign to get new information or feedback on their products and/or

Hypotheses	Path coeff	Boot std. Err.	Perc. 0.5	Perc. 0.95	t-value	Support
H1 Entrepreneurial Alertness on Motivations						
H1a Entrepreneurial Alertness on Product and Market Knowledge	0.162	0.115	-0.027	0.351	1.412	NS
H1b Entrepreneurial Alertness on Networking	0.187	0.109	0.007	0.367	1.711	Yes*
H1c Entrepreneurial Alertness on Promotion	0.261	0.097	0.101	0.421	2.690	Yes*
H2 Entrepreneurial Self-Efficacy on Motivations						
H2a Entrepreneurial Self-Efficacy on Product and Market Knowledge	-0.229	0.106	-0.404	-0.055	-2.166	Yes**
H2b Entrepreneurial Self-Efficacy on Networking	-0.253	0.086	-0.395	-0.111	-2.937	Yes**
H2c Entrepreneurial Self-Efficacy on Promotion	-0.127	0.097	-0.286	0.032	-1.318	NS
H3 Motivations on Campaign Characteristics						
H3a Product and Market Knowledge on Campaign Offer	-0.176	0.101	-0.342	-0.011	-1.750	Yes*
H3b Product and Market Knowledge on Campaign Presentation	0.058	0.150	-0.188	0.304	0.389	NS
H3c Networking on Campaign Offer	0.053	0.147	-0.188	0.294	0.361	NS
H3d Networking on Campaign Communication	-0.348	0.153	-0.600	-0.096	-2.272	NO**
H3e Promotion on Campaign Offer	-0.110	0.157	-0.368	0.149	-0.697	NS
H3f Promotion on Campaign Communication	0.307	0.181	0.008	0.605	1.692	Yes*
H4 Campaign Characteristics on ECF Performance						
H4a Campaign Offer on Performance	-0.210	0.059	-0.308	-0.112	-3.534	Yes**
H4b Campaign Communication on Performance	0.484	0.079	0.353	0.615	6.093	Yes***

Note(s): Yes = supported; NO = Not supported; NS = not significant; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (based on $t(4,999)$, One-tailed test)

Table 5. Structural model results and path coefficient

the target market, they will lower their COC (Vismara, 2016; Di Pietro *et al.*, 2018; Estrin *et al.*, 2018). At the same time, we found no evidence of these motivations' effects on the CCC, as was expected from the existing literature (Bretschneider and Leimeister, 2017; Block *et al.*, 2018b).

Our analysis does not support the idea that entrepreneurs wanting to expand their network will lower some COCs (we were expecting a positive effect of these motivations on their CCC) (Brown *et al.*, 2019). According to some authors (Belleflamme *et al.*, 2014; Vismara, 2016), the crowd is mostly composed of amateurs with limited experience who are only useful for increasing word of mouth (Cholakova and Clarysse, 2015; Vismara, 2018). These findings agree with some scholars (Ahlers *et al.*, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016) who hold that when entrepreneurs prefer to attract more experienced investors, they will try to leverage the funding target and equity offered as signs of their commitment.

This study's framework highlights, in support of previous findings by several authors (Mollick, 2014; Block *et al.*, 2018b), that entrepreneurs looking to exploit ECF as a way to promote their business or their business idea will increase the CCC of their campaign (such as adding more photos or updating the campaign more often) (Wald *et al.*, 2019).

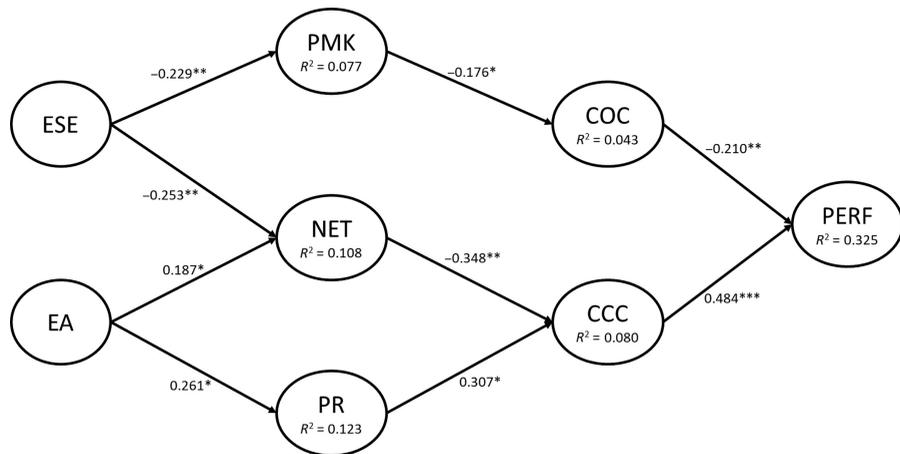


Figure 2.
Results of the model
evaluation

Finally, we found strong support for our last two sub-hypotheses. As suggested by prior studies (Ahlers *et al.*, 2015; Lukkarinen *et al.*, 2016; Vismara, 2016, 2018; Vulkan *et al.*, 2016), campaign characteristics influence ECF performance. Specifically, CCC has a positive impact on ECF performance, while COC has a negative impact.

Managerial and practical implications

The findings of this research, highlighting some suggestions to improve EDM processes in ECF, may also provide useful implications for entrepreneurs and policymakers.

This research warns entrepreneurs to be aware of their decision-making processes and to evaluate and monitor them over time. When entrepreneurs improve their understanding of EDM – a complex process in which their characteristics, motivations and behaviours are linked to each other – they will make better decisions, avoiding biases and increasing their effectiveness.

Our results might help them to more clearly define their choices in ECF campaigns and to align their campaign characteristics with the desired results they need to grow their business (Wald *et al.*, 2019). Entrepreneurs, in fact, need to not only manage crowd inputs to get additional resources but also create added value for their companies. The results might help entrepreneurs to enhance their choices and actions to support their business development.

Entrepreneurs adopting ECF should, above all, consider the kind of backers they want to attract. When they want to attract experienced investors, they should set their campaign offer at an adequate level to attract external stakeholders and relevant industry players (Di Pietro *et al.*, 2018). This is an intriguing insight since in the current scenario it is relevant to understanding how entrepreneurs deal with other stakeholders (Caputo *et al.*, 2018). Moreover, our results highlight that entrepreneurs may adopt ECF as an OI platform to get meaningful feedback and as a tool to promote their business; these two motivations are significantly related to ECF performance, showing that these two objectives may reinforce each other.

However, entrepreneurs should pay attention to their self-efficacy and to the idea that ECF may provide them only with financial resources as, according to our data, this is a self-defeating approach; it increases the focus on campaign characteristics linked to the offer, while reducing those linked to communication, effectively reducing the possibility to reach success.

Also, investors, platform managers and authorities would find it useful to understand the EDM process in ECF as presented in this research. This research highlights that policymakers and platform managers should try to engage more sophisticated investors since entrepreneurs still do not consider ECF platforms as a viable source of valuable relationships (Di Pietro *et al.*, 2018). Adding these new investors may prove useful in making ECF more attractive to entrepreneurs without having to lose the knowledge value of the crowd. This is particularly relevant as even if we had found a positive and statistically significant effect of CCC on ECF performance (factor loading = 0.48), the NET and PR effects on CCC are opposite, potentially negating each other's beneficial effects.

Our data highlight that both the motivation to get feedback from the crowd and the one to leverage the crowd as ambassadors for the company increase ECF performance (Mollick, 2014; Vismara, 2016; Block *et al.*, 2018b; Polzin *et al.*, 2018); accordingly, platform managers should try to help entrepreneurs use them to more actively engage the crowd. One option could be to suggest entrepreneurs provide a minimum number of updates for their campaigns or to provide them with a forum to interact proactively with their potential backers.

EDM may be considered from the perspective of national ECF programs. Often, such programs tend to emphasise the intuitive side of decision-making, while the focus on entrepreneurs remains underestimated. For these reasons, it might be useful for academics and institutions to start looking at entrepreneurs as strategic decision-makers who need to develop and be more aware of their EDM process as well as the role of their characteristics, motivation and behaviours. Hence, authorities and policymakers should offer specific programs in which both EDM and strategic thinking are promoted for entrepreneurial success in new contexts like ECF. Authorities (e.g. Consob in Italy) are interested in the entrepreneurial dynamics of ECF and trying to encourage entrepreneurs to not only use ECF to get financial resources.

Conclusions, limitations and avenues for future research

This study is among the first focused on EDM in the ECF context. We have explored some entrepreneurial decisions that precede the launch of a campaign, and we have found that at the base of EDM there are important entrepreneurial characteristics influencing their motivations and behaviour.

Entrepreneurs that decide to use ECF present different levels of EA and ESE, leading them to search for different opportunities deriving from crowd exploitation (PMK, NET and PR). These motivations in turn influence entrepreneurial behaviours (CCC and COC) and, as a consequence, ECF performance.

This study leveraged well-known constructs in the literature and developed a theoretical framework based on EDM theory to understand decisions by entrepreneurs in a new context.

The added value of this research lies in the analysis of the entrepreneurial aspects underlying entrepreneurial decisions to use ECF. Our results highlight that these aspects are central in decision-making and play a key role in the ECF context. The study highlights that the choice of campaign characteristics is only the last step of a much broader process in which both the characteristics and motivations of the entrepreneur have significant importance. Moreover, our research points to the need to study the pre-campaign phases as a way to further contribute to the EDM literature.

Our research is explorative and limited in several ways. Given the novelty of both the context and the topic, there is a scarcity of other contributions based on entrepreneurial perspectives, and, in particular, there is a lack of studies which specifically explore EDM in ECF. This is the first, and most important, limitation of our research since we cannot make

comparisons with previous studies in this field to find support for our results or not. We acknowledge that this was an explorative study, so we have investigated EDM in the ECF context using well-known constructs – i.e. EA and ESE – without considering other entrepreneurial motivations, traits and characteristics that could be explored to improve our understanding of EDM in ECF. The second limitation is that we focused on three types of entrepreneurial aspects, but other parameters could be examined for the same purpose. This offers several possible avenues of future research. In this vein, other intriguing aspects of EDM to investigate within the ECF context could be related to emotions, cognitive parameters, entrepreneurial capabilities and how the relationship with the surrounding environment affects entrepreneurs' judgments (Sadler-Smith, 2004; Cardon *et al.*, 2012; Foss *et al.*, 2019).

Another limitation of the research lies in the sample size, 26.36% of the actual Italian ECF population, but as ECF is growing in numbers and rapidly evolving, thanks to new technologies (e.g. ICOs, STOs and IEOs) (Politecnico di Milano, 2019), our data will probably need to be updated soon even if the number of entrepreneurs fully interviewed represents today a satisfactory sample, given the novelty and the dimension of ECF (different from other models, such as reward crowdfunding). In the future it will be possible to enlarge the survey sample by replicating the interviews through different sources (e.g. phone-based interviews) and enrich the data, thanks to new campaigns that have been launched since this study's inception by other entrepreneurs.

Moreover, as this is a novel topic, scholars still have to develop a full set of validated scales for these constructs that could increase these studies' predictive power; new research attempts should use more engaging methodologies in order to capture more personal characteristics, such as emotions, cognitive parameters and environments.

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Appendix 1
List of abbreviations

ECF	Equity Crowdfunding
EDM	Entrepreneurial Decision Making
VC _s	Venture Capitalists
BA _s	Business Angels
EA	Entrepreneurial Alertness
ESE	Entrepreneurial Self Efficacy
PMK	Product and Market Knowledge
NET	Networking
PR	Promotion
CCC	Campaign Communication Characteristics
COC	Campaign Offering Characteristics
SS	Scanning and searching
AC	Association and Connection
EJ	Evaluation and Judgment
OI	Open Innovation
AON	All Or Nothing (model)
PERF	Performance
PLS	Partial Least Squares
SEM	Structural equation modeling
VIF	Variance Inflation Factor
CMB	Common Method Bias
AVE	Average variance extracted

Item	Description
SS1	I have frequent interactions with others to acquire new information
SS2	I always keep an eye out for new business ideas when looking for information
SS3	I read news, magazines, or trade publications regularly to acquire new information
SS4	I browse the internet every day
SS5	I am an avid information seeker
SS6	I am always actively looking for new information
AC1	I see links between seemingly unrelated pieces of information
AC2	I am good at “connecting dots”
AC3	I often see connections between previously unconnected domains of information
EJ1	I have a gut feeling for potential opportunities
EJ2	I can distinguish between profitable opportunities and not-so-profitable opportunities
EJ3	I have a knack for telling high-value opportunities apart from low-value opportunities
EJ4	When facing multiple opportunities, I am able to select the good ones
ESE1	I’m confident I’m successful at identifying new business opportunities
ESE2	I’m confident I’m successful at creating new products
ESE3	I’m confident I’m successful at thinking creatively
ESE4	I’m confident I’m successful at commercialising an idea or new development
PMK1	In ECF I look for learning new product/service features to consider
PMK2	In ECF I look for feedback on the early-version of the product/service
PMK3	In ECF I look for getting needed foreign country information
PMK4	In ECF I look for getting market trends insights
PMK5	In ECF I look for information about potential competitors and partners
NET1	In ECF I look for connections with key industry players
NET2	In ECF I look for contacts with investors to obtain additional financing
NET3	In ECF I look for distribution contacts
NET4	In ECF I look for connections to favour recruitment of key staff
PR1	In ECF I look for leveraging crowd’s contacts to help promote my business
PR2	In ECF I look for backers acting as marketing channels
PR3	In ECF I look for backers helping me in spreading the word through social media

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