CROWDSOURCING INNOVATION: THE DRIVERS OF THE INVESTORS' DECISION THROUGHOUT THE INVESTMENT PROCESS IN EQUITY CROWDFUNDING

IOANNA PAVLIDOU

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The Hong Kong Polytechnic University

Department of Industrial Systems & Engineering

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Ioanna Pavlidou

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CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

Ioanna Pavlidou

To my mother, Anastasia,

my father Theodoros

and Professor Eric Tsui

Abstract

The current entrepreneurial environment is widely characterized by short product lifecycles and high competition. In this context, crowdsourcing has been recognized both by academia and industry as a useful tool for business ventures to enhance their resources, financial and non-financial, and strengthen their competitive advantage. While widespread forms of crowdsourcing, such as ideation competitions, focus on non-financial resources, new forms of crowdsourcing have been emerging to fill the needs of ventures in the full spectrum of financial and non-financial resources.

One such form is Equity Crowdfunding (ECF), which is the focus of the empirical research of this thesis. In ECF, ventures can fundraise to bridge their funding gap and at the same time leverage the big pool of crowd-investors to expand their knowledge and network resources.

Past studies on Equity Crowdfunding do not approach it as a form of crowdsourcing. Studies treat the ECF crowd as an aggregate body of investors, without considering its heterogeneity. Second, most of the studies adopt an outcome-based approach in understanding investors' perceptions by identifying elements of successful ECF campaigns that are attractive to the crowd. Therefore, it is difficult to understand what is the rationale behind a certain investment decision. Third, the second and third stages of the ECF process have been seriously neglected from the investor perspective. ECF consists of three stages: the decision to invest in an innovation, the monitoring and participation and the evaluation of the investment and exit. The majority of the studies are focused on the first stage, only a few engage with the second and none has explored the third stage.

This research study fills these gaps by exploring ECF in all the three stages: a) the decision to invest in an innovation, b) the monitoring and participation and, last c) the evaluation of an

innovation and the exit. The results indicate which are the main pillars of investors' decision-making in each stage. Moreover, this study reveals how aspects of the heterogeneity of the crowd-investors influence their decision-making process throughout all the stages of ECF. Such aspects are related to the investor type (Professional/Retail investors), the innovation intensity of the proposed investment (High-Tech/Low-Tech) and the impact orientation of the investors (Regular/Impact investors).

The findings of this study provide significant contributions both to academia and industry. Regarding the academic research, being the first study to approach certain aspects of ECF, it will set the scene for further research in those areas. These aspects include the relationship between investors' heterogeneity and their decision-making throughout the ECF stages, the topic of exit in ECF and the evaluation of innovation for early-stage ventures in general and particularly for ventures raising funds through ECF. Second, it contributes to the industry in multiple ways. Insights from the results can help early-stage ventures to navigate within their development process and prepare better for fundraising. Moreover, it can contribute to the learning process of young or retail investors to develop more well-informed decisions.

List of Publications arising from the thesis:

1. **Pavlidou, I**., Papagiannidis, S. and Tsui, E. (**2020**), **"Crowdsourcing: a systematic review of the literature using text mining",** Industrial Management & Data Systems, Vol. 120 No. 11, pp. 2041-2065. https://doi.org/10.1108/IMDS-08-2020-0474
2. Pavlidou, I., Papagiannidis, S. and Tsui, E. (**2022**) (working paper) "**Business, Impact or Tech-Hype? The investors motivations in Equity Crowdfunding.**"
3. Pavlidou, I., Papagiannidis, S. and Tsui, E. (**2022**) (working paper) "**Innovation as an investment proposition: evidence from Equity Crowdfunding**"

Acknowledgements

When Odysseus left Troy to return to his home, Ithaka, he never imagined that his journey would be so long and challenging. But through rediscovering his strengths and with the help of Gods, like Athena, and mortals, he managed to arrive to his beloved Ithaca.

This PhD journey has been my own Odyssey. There were many times that the weather was unfavorable and the ship was about to break apart. I have been blessed though, like Odysseus, to receive blessings and support from Gods and mortals.

I would like to thank first my mother, Anastasia, and my father, Theodoros, for their infinite love and support; for always giving me more than they have and for being the best role models for me. My mother, for waiting for me patiently to graduate and reunite and for supporting me psychologically through all the storms, with the promise to compensate her for everything. My father, for being the strongest, most kind-hearted and virtuous human I have known who always inspires me to follow his example. When I greeted you at the airport, I couldn't imagine that you wouldn't be there when my Odyssey ends. I wish you could wait a bit longer so I can have the opportunity to give back to you everything you offered me. I still hope you can receive my love where you are.

This PhD wouldn't be possible without my supervisor and academic father, Professor Eric Tsui. The support he has provided me cannot be described with words. His understanding, his guidance, his advice, his kindness, his generosity, his fairness and his encouragement not to give up is who brought me here. His impact on myself and the person I want to become will exist forever.

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1 Introduction

1.1 Background of the thesis: crowdsourcing

The digital revolution has had a tremendous impact on the economy, since it placed information sharing as the pillar of modern economic activities, transformed the means of production and the processes of value creation and stimulated the transition to the knowledge economy (Vesein, Radislav, Mimo, & Jereb, 2013), where knowledge-intensive skills and continuous innovation are considered core competencies. In such a dynamic market, individuals and ventures are required to reconfigure their resources, physical, human and organizational, and demonstrate strong dynamic capabilities in order to sustain competitive advantage (Eisenhardt & Martin, 2000; Marjanovic et al., 2012; Teece, 2007). Online models, platforms and communities, such as crowdsourcing, appear important by providing the opportunity to allocate distant human, social and network capital, which is crucial in acquiring knowledge and producing innovations and economic value (Afuah & Tucci, 2012; Huggins & Thompson, 2015). Access in multiple resources is necessary for young ventures for which the time between their conception and the revenue creation has been always critical for their survival and building a resource network, that can accelerate this process, demands time (Stayton & Mangematin, 2019). However, it is also significant even for more mature ventures that in today's rapidly changing environment, where the product lifecycle is significantly shortened and the competition is very high, need to constantly redefine the needs of the market and their own capability of engaging in innovation and producing new products (Bahrami & Evans, 2011).

In such a context, crowdsourcing appears attractive as it provides auspicious opportunities for individuals and ventures to enhance their resources by opening up their organizational

boundaries to external actors. Howe, (2009) was one of the first to describe this model as the act of assigning a task that would be traditionally fulfilled by employees of a company to individuals or teams outside of an organization i.e. outsourcing, but through an open-call invitation directed to an heterogenous, indistinct and vast pool of people. This prior definition was later updated by Kietzmann, who argued that crowdsourcing nowadays is facilitated by "*the use of IT to outsource any organizational function to a strategically defined population of human and non-human actors in the form of an open call*" (Kietzmann, 2016).

1.2 Crowdfunding as a form of crowdsourcing

A particular form of crowdsourcing i.e. crowdfunding, has become very popular in the last decade. Crowdfunding appeared as a category of crowdsourcing that is used to crowdsource primarily financial value (Assis Neto and Santos, 2018;Estellés-Arolas *et al.*, 2015) . There are four forms of crowdfunding, that are briefly presented in Chapter 2. Among those, Equity Crowdfunding (ECF) is the main form being used by innovative young ventures to raise capital.

The emergence of Equity Crowdfunding appeared as a "revolution" in the financing of early-stage ventures due to two important characteristics. The first characteristic is that ECF enables early-stage business ventures to *fundraise online* and the second, which is the subject of this study, is that it enables ventures to *fundraise from the crowd*. These two characteristics together explain how important is the role of Equity Crowdfunding in today's world and thus why it has been chosen as the base for the empirical part of this study.

Although *online crowdfunding* appeared recently, it has a very long history in the world. From the eranos[1] in ancient Greece of 4 b.c. where interest-free loans, collected from friends, acquaintances or the citizens as a body, were accredited to individuals in a reciprocal manner and in the framework of the Athenian spirit of mutual social support (Weis & Millett, 1993), to the British rock band Marillion in 1997 that managed to avoid the cancellation of their tour by requesting donations from fans (Davies, 2015). Later on, with the creation of numerous crowdfunding platforms, the crowd has been an alternative type of financing in situations of financial shortage. One major difference between the Athenian and today's citizens is that the breakthroughs of Information Technology and the Digital Revolution lowered the search and the communication costs (Forman et al., 2005; Gurbaxani & Whang, 1991) and facilitated the transition from the "rural" to the "global village" (Heather, 2013) in such a way that the world started to look "flat" again (Ikenberry & Friedman, 2005). Along with the spread of the online platforms and the creation of online communities that connect individuals who don't belong in the same polis[2] or country, the reduction of location constraints gave rise to the potential of allocating distant resources (Faraj, 2015; Van Alstyne & Brynjolfsson, 2005).

In this context, the online character of crowdfunding placed this form of financing at the antipode of the traditionally established funding schemes. Traditionally, the uneven geographical distribution of financial institutions and the tendency of investors to invest in local projects, have placed spatial proximity between the capital providers and capital seekers of high significance (H. Chen et al., 2010; Lutz et al., 2013; Martin et al., 2005; Mukherjee et al., 2018). ECF however offered for the first time a channel to bridge location disparities and lessen the home bias effect that appears in finance and lending transactions (Langley & Leyshon, 2017; Mollick, 2014). Overcoming the constraints of geography may provide a

[1] Eranos in ancient Greece was a form of interest-free loans from friends and co-zitizens

[2] The city as a state and body of citizens in ancient Greece(Dana, 2016)

more equal access to borrowing, and thus contribute to the democratization of capital (Mollick & Robb, 2016), as the effective capital distribution is akin to the economic growth (Levine, 2004). Giving the opportunity to individuals and groups that have been in the margins of the local or global economy, e.g. people located far from financial institutions or people that lack credit history (Yum et al., 2012), may help in dealing with social inequalities (Barry, 2012). Furthermore, the increase of borrowing opportunities can stimulate the local economy directly, through the funding of individuals and firms, or, indirectly, through increasing local employment and income (Samila & Sorenson, 2011). Opportunities for funding entrepreneurial initiatives can also promote local innovation and entrepreneurship through peer influence and information dissemination, as in areas with high entrepreneurial and lending activity more people may turn in this direction and also become more aware of the know-how it requires (Laursen et al., 2011; Martin et al., 2005). Thus, the importance of studying the mechanisms around Equity Crowdfunding is imperative.

The second characteristic of ECF is related to being a form of crowdsourcing. As mentioned above, ECF allowed for the first time the financing of young ventures from a *big and heterogenous pool of investors*, the crowd investors. This crowdsourcing mechanism, which is explained in more detail in Chapter 2, had certain implications in the domain of financing of young ventures. First, ECF allows a young venture to raise the same amount of capital from *a high number of investors* who contribute smaller portions of capital and consequently bear lower risks. As risk is very high in the financing of young ventures, the mitigation of this risk through crowdsourcing lessens the investment barriers in high-risk investments. Second, ECF allows raising capital from an *heterogenous pool of investors*. Traditionally, young ventures seek capital from few investors, venture capital firms or angel investor groups. This limited visibility can bear selection biases and a narrower evaluation process. The heterogeneity of crowd investors in ECF can potentially mitigate these selection biases and

bring a broader view on the evaluation and the financing of firms. This expansion can potentially democratize how innovations are selected and funded.

Despite its significance, the literature on the crowd behaviour in ECF have been limited so far. This limitation is related to three research gaps. First, the studies on Equity Crowdfunding do not approach it as a form of crowdsourcing. As shown later in the Chapter 2, ECF accounts for a very small fraction of the scholarly research on crowdsourcing. Studies treat the ECF "crowd" as an aggregate body of investors, without considering its heterogeneity. For example, they assess the motivations of investors without differentiating the type of investor (Estrin et al., 2018; Lukkarinen et al., 2019; Moysidou & Spaeth, 2016; Pearson et al., 2016; Troise & Tani, 2020; Wald et al., 2019; Wasiuzzaman et al., 2021). Second, most of the studies adopt an outcome-based approach in understanding investors' perceptions. For example, they try to elicit investment decision-making criteria only by exploring the characteristics of the successfully-funded ventures and how the crowd responds to certain campaign information (G. K. C. Ahlers et al., 2015; Block et al., 2018; D. Cumming et al., 2021; Feola et al., 2021; Ferreira & Pereira, 2018; Pietro et al., 2020; Ralcheva & Roosenboom, 2019; Shafi, 2021; Vrontis et al., 2020). Nevertheless, the crowd is might not be using only the campaign information in order to make an investment decision. At the same time, this approach doesn't provide understanding around the rationale of a certain decision. Third, the second and third stages of the ECF process have been seriously neglected from the investor perspective. ECF consists of three stages: the decision to invest in an innovation, the monitoring and participation and the evaluation of the investment and exit. The majority of studies are focused on the first stage, only a few engage with the second (Di Pietro et al., 2018; Moritz et al., 2015; Signori & Vismara, 2018) and none has explored the third stage. Fourth, the majority of studies on crowd behaviour on ECF are of quantitative nature. Some adopt surveys, that are based on pre-defined criteria (Moysidou & Spaeth,

2016; Pearson et al., 2016). Others rely on analysing the online data that exist in crowdfunding platforms and social media-that offer limited information anyway- by trying to draw implicit conclusions. Therefore, the nature of these studies sets a limit on understanding the real views of investors regarding the investment process on Equity Crowdfunding.
These gaps lead to the following research questions:

RQ1: What are the perceptions of the crowd investors throughout the investment process in Equity Crowdfunding?

RQ2: What is the relationship between different types of investors and their perceptions throughout the investment process in Equity Crowdfunding?

This study contributes to the above research gaps in various ways. First, it approaches ECF as a form of crowdsourcing considering aspects of crowd heterogeneity. As explained in the Methodology (Chapter 3), three types of investors are included in the empirical part of the study: Retail/Professional, Low-Tech/High-Tech and Regular/Impact. Second, the study employs a qualitative approach for its empirical part, that is based on investors interviews. Qualitative research, as explained in Chapter 3 of Methodology, allows a broader and deeper understanding on the subject matter. Third, the study explores all the three stages of ECF: the decision to invest in an innovation, the investment monitoring and participation and the evaluation of innovation and exit.

2 Literature Review

The aim of this Chapter is twofold. First, to present a systematic literature review on crowdsourcing. Second, to provide a brief description specific to crowdfunding, including Equity Crowdfunding which is the context of the empirical study.

This chapter is structured as follows. Section 2.1 introduces the purpose of the literature review. Section 2.2 presents the methodology that was employed to conduct the systematic literature review. Section 2.3 illustrates the findings as emerging themes derived from quantitative content analysis. Last two sections (2.4, 2.5) are providing a summary of the typology of crowdfunding as a particular form of crowdsourcing. Although all forms of crowdsourcing are based on the common principles described in the previous chapter, each of the forms has some unique characteristics as well. Presenting a summary on the typology of crowdfunding provides better understanding towards the context of the empirical study, that is Equity Crowdfunding.

2.1 Introduction

The crowdsourcing literature has grown over the years, with a number of reviews aiming to systematically and critically analyze it from different vantage points. For example, the review by (Assis Neto & Santos, 2018) focuses on quality and workflow control; the work by (Estellés-Arolas et al., 2015) suggests a typology. The work by (Hossain & Kauranen, 2015) primarily presents the applications; and the work by (Ghezzi et al., 2018) approaches crowdsourcing as a process. Despite reviews covering a range of topics in this area, their coverage of crowdsourcing skills has been relatively scarce. Crowdfunding in previous reviews of crowdsourcing has either been presented exclusively as a category of crowdsourcing that is used to crowdsource financial value (Assis Neto & Santos, 2018;

Estellés-Arolas et al., 2015) or it has been completely excluded, which is also self-acclaimed as limitation (Ghezzi et al., 2018; Hossain & Kauranen, 2015).

Given the aforementioned, there is a need to adopt a wider stance. The objective of this chapter is to present a holistic overview of the literature on online crowdsourcing. This is achieved by first highlighting what the evidence is for the value of the crowd as a solution provider and how this value can bring innovation results and increase the performance of a firm. Later, insights are presented regarding operational aspects and the construction and mobilization of the crowd itself. In addition, the chapter aims to illustrate the aforementioned perspective in online crowdfunding as an extended value-creation ecosystem. Based on this literature review, firms can get a better understanding on how crowdsourcing can be leveraged for organizational purposes. Furthermore, researchers can consider the literature areas and identify potential topics for future research. Last, this paper adopts a systematic approach that is based on a quantitative content analysis, making it possible to shed light on emerging themes with higher reliability and validity (Riffe, 2005; Short et al., 2010)

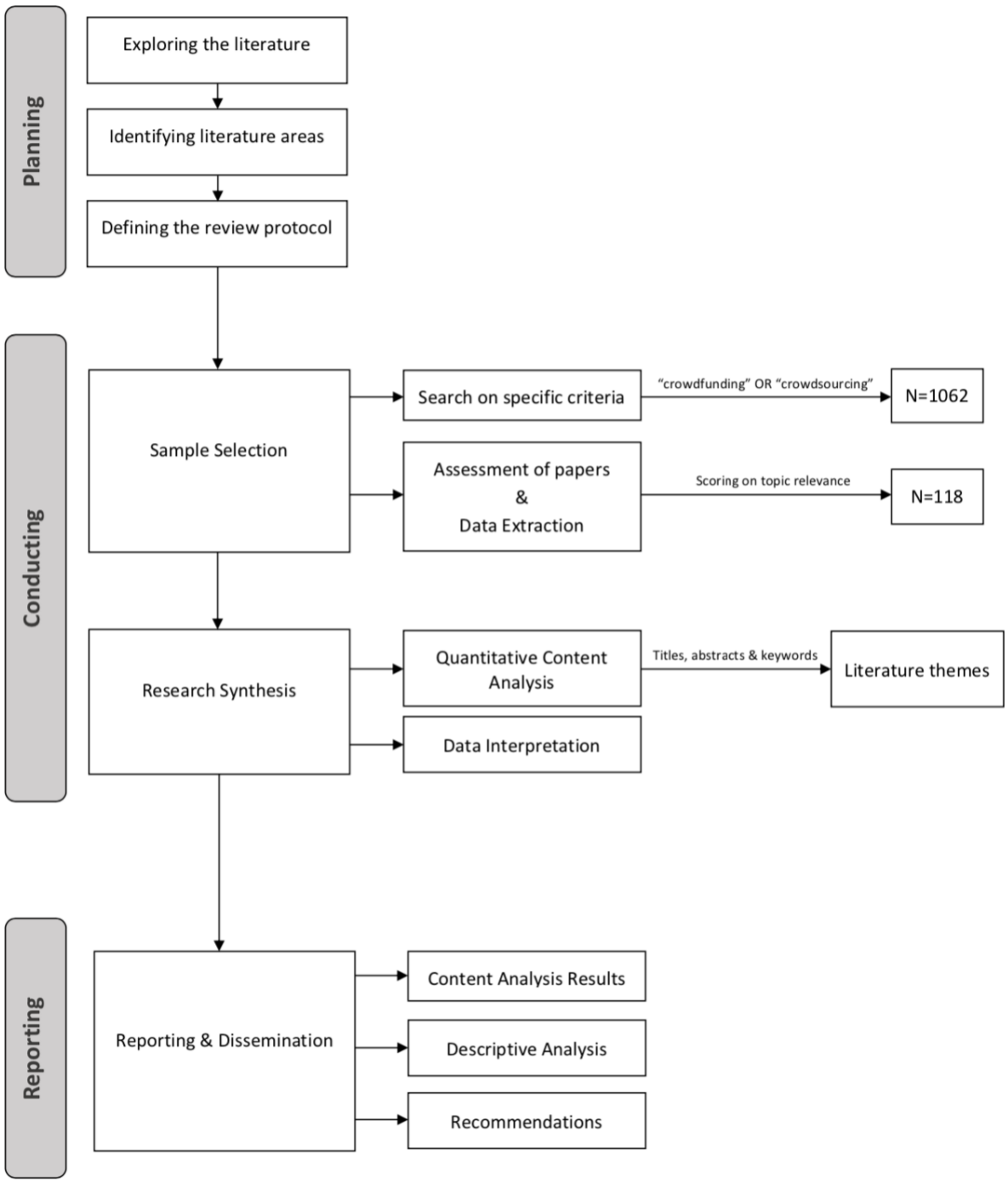
2.2 Methodology

In order to approach the research subject, the current study performs a systematic literature review. According to Fink's definition, a review should have four main attributes: being systematic by adopting a methodology; explicitness by providing the process in detail; comprehensiveness by covering the spectrum of the relevant research; reproducibility by allowing other scholars to understand it and use the same approach (Fink, 2005; Okoli & Schabram, 2010).

As for the methodology, this literature review follows the guidelines recommended by (Tranfield et al., 2003) in the direction of identifying published research work in the areas of

crowdfunding and crowdsourcing. The specific systematic literature review methodology was brought from the medical field to management with the objective ”*to enhance the legitimacy and authority of the resultant evidence and provide practitioners and policy-makers with a reliable basis to formulate decisions and take actions*” (Tranfield et al., 2003). It consists of three stages: 1) planning the review 2) conducting the review and 3) reporting and dissemination that are adopted in this study, as depicted in Figure 1, and are discussed more thoroughly in the following part of this section.

Figure 1: Steps of the Literature Review Process



2.2.1 Planning the review

During this step, an exploration of the subject was undertaken in order to gain a sense of the definitions, the main concepts and perspectives and acquire a preliminary overview of the area. This was performed through an iterative process, going back and forth on the "definitions, clarifications and refinements" and was concluded on implementing the subsequent review protocol based on the identified research gaps.

2.2.2 Conducting the review

By integrating the suggestions of (Tranfield et al., 2003), in order to conduct the review, the tasks including searching the literature, assessing and extracting the most relevant papers and composing the research synthesis.

Sample selection: The first step was to search the database Scopus, that includes indexed, peer-reviewed journals and conference proceedings without limiting the search by discipline. Scopus was selected as it is a meta-database of scientific research that includes one of the highest number of journals and publications. For example, for publications between 2010-2018, Web of Science overlap with Scopus is 99.11% of Web of Science, while the Scopus overlap with Web of Science is 33.93% of Scopus (Singh et al., 2021). The database search was conducted in the last two weeks of August 2019, and targeted the title, abstract, keywords and context of the manuscripts and the terms used were "*crowdfunding*" or "*crowd funding*" or "*crowdsourcing*" or "*crowd sourcing*". The results from the keywords search identified 4,649 papers published between 2008 and 2019. Given the fact that not all the results were studying the subject of crowdsourcing or crowdfunding but were only mentioning it as a parameter of influence, the papers had to be further examined, by adding

some further criteria: a) the language is English, b) the papers are published in peer-reviewed journals and c) the subject areas are limited to Computer Science, Social Sciences, Business, Decision Sciences, Psychology and Economics. The final number of the papers was then 1062.

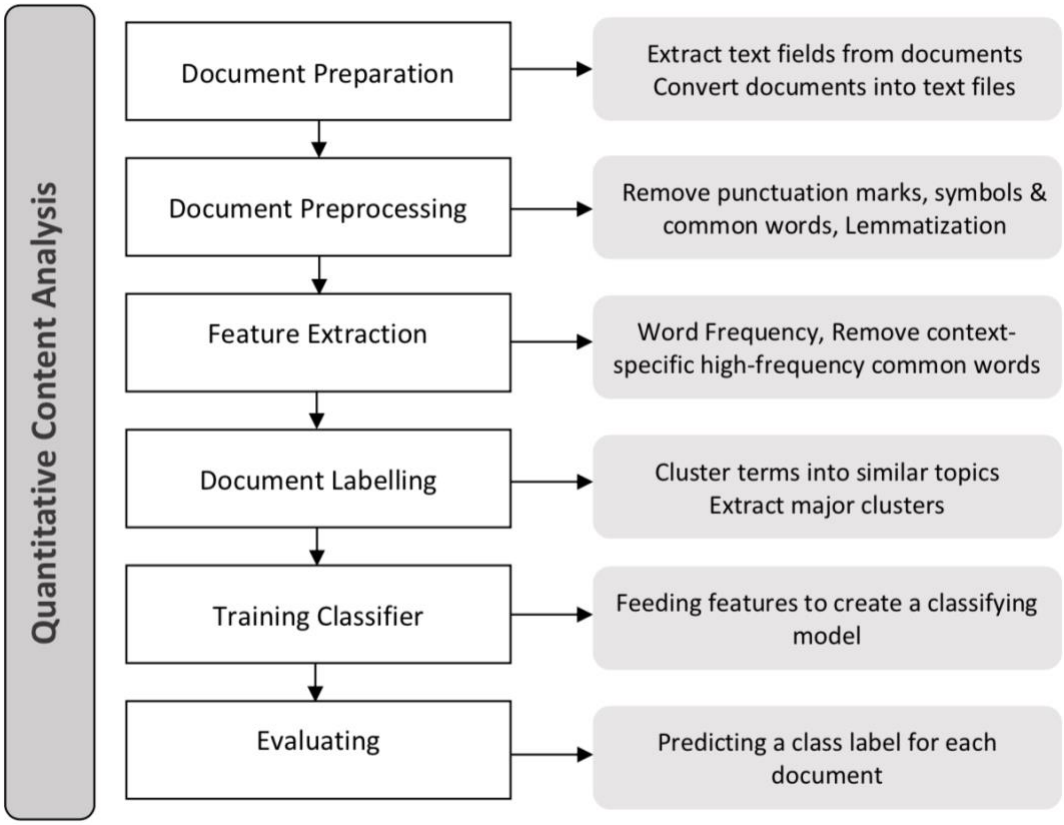
The second step was conducted by two reviewers and included two rounds of assessment of papers through reviewing the titles, abstracts and keywords of the papers.

Then, the third step was the data extraction where each paper was scored with 0 or 1 based on its relevance to the concept of crowdfunding or crowdsourcing no matter the discipline of the methodology employed as long as the results and conclusions were constructive for the field of study from the lenses of management. The first round of scoring and selection resulted in 179 papers and the 2nd round in the final number of 119 papers.

Research Synthesis: The final stage of conducting this review is research synthesis (Figure 2), which is about "*summarizing, integrating, and, where possible, cumulating the findings of different studies on a topic*" (Tranfield et al., 2003). It was performed through the method of Quantitative Content Analysis (QCA) which employs systematic coding techniques in order to classify parts of text and draw inferences about the communication content (Krippendorff, 2004). QCA was utilized through the programming language R and the software QDA Miner and its extension WordStat, which have been used successfully for text analysis across different domains of research (Al-Rawi, 2017; Davlembayeva et al., 2019; Hartt, 2018). The main advantage of these tools lies in the fact that they combine a variety of well-established qualitative and quantitative measures, such as in Table 1, which allows for the verification and replicability of the process and results. They also accept and relate numerical to categorical data, allowing the creation and configuration of project-based dictionaries and integrating different types of text analysis visualization that provide a comprehensive system for experimentation, development and finalization of the analysis (Davlembayeva et al.,

2019). The steps of the process are illustrated in Figure 2. The source of the analysis included the titles, abstracts, keywords, author names and all the information about the paper's publication. The first step of QCA was content pre-processing and included removal of punctuation marks, symbols and common words, lemmatization of the words, so as to count as a single word those that have common roots and high-frequency words that were not context related, such as "journal", "paper", "article", "finding", "research", "study", "analysis", "reference", "gap". This technique provided a fast, labor-efficient and accurate analysis of the major themes in the literature, but it does not offer an exhaustive representation of the secondary dimensions in each category. Thus, further analysis is relied on combining the results with domain knowledge and the critical judgement of the researchers.

Figure 2 Process of Quantitative Content Analysis



2.2.3 Reporting and dissemination

The third stage of reporting and dissemination aims to present a summary of the results through statistics about the chronology, methodology and content of the research papers and, later, give a brief description of the different themes and perspectives. Figure 3 shows that the major stream of research on crowdsourcing starts in 2008 and demonstrates an extensive growth mainly after 2012. The topic has been approached by various methodological angles, as depicted in Figure 4, both qualitative and quantitative; theoretical and applied.

Figure 3 Number of publications per year

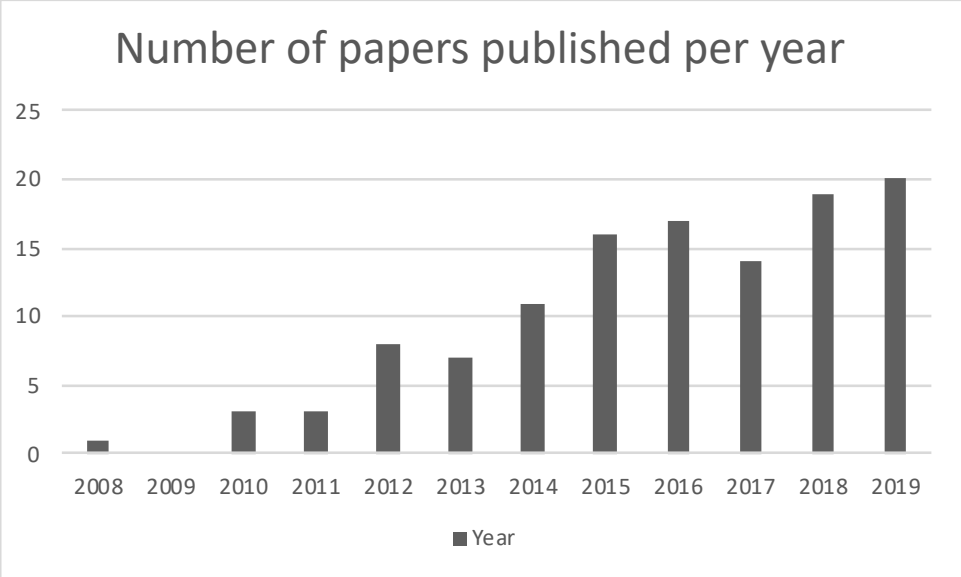


Figure 4 Number of publications per research methodology

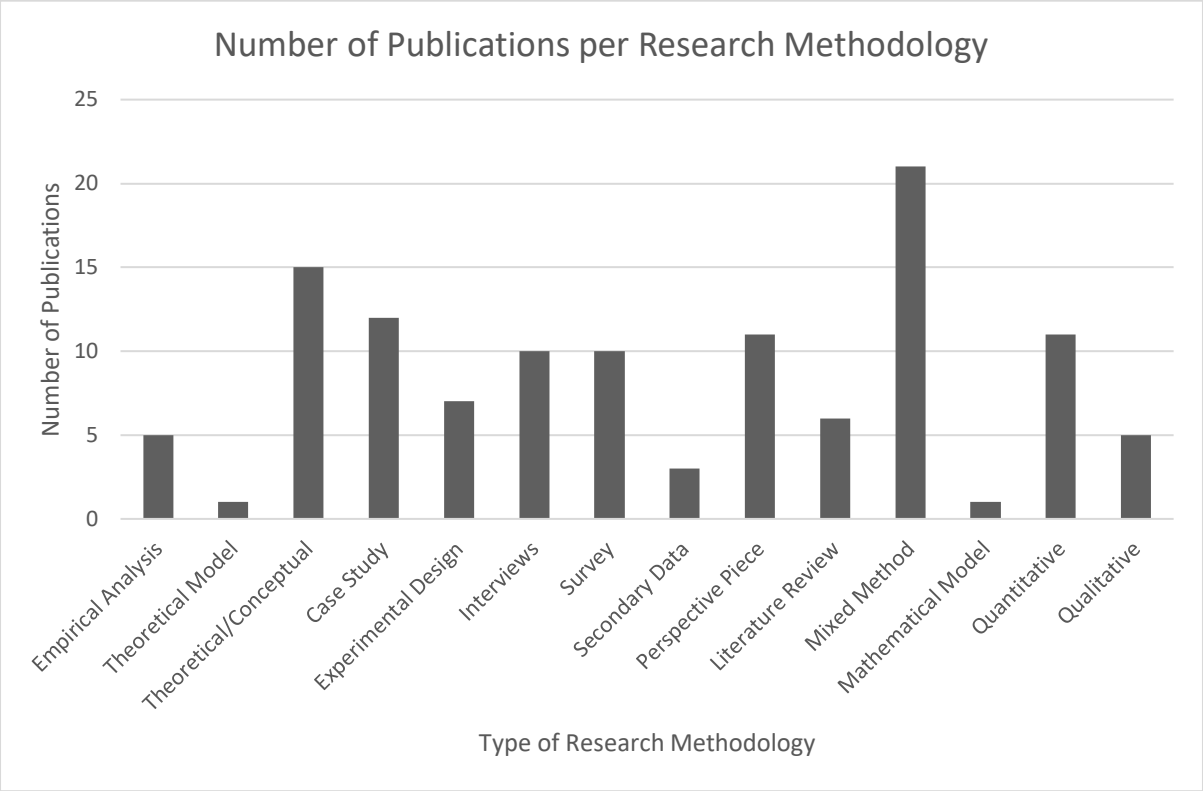


Table 1 The most frequent terms in the crowdsourcing literature

	FREQUENCY	% SHOWN	% PROCESSED	% TOTAL	NO. CASES	% CASES	TF IDF
CROWDSOURCING	489	18.49%	4.20%	3.62%	97	86.61%	30.5
CROWD	212	8.02%	1.82%	1.57%	87	77.68%	23.3
CROWDFUNDING	144	5.44%	1.24%	1.06%	27	24.11%	89
INNOVATION	109	4.12%	0.94%	0.81%	36	32.14%	53.7
FIRMS	99	3.74%	0.85%	0.73%	39	34.82%	45.4
SOCIAL	73	2.76%	0.63%	0.54%	26	23.21%	46.3
ONLINE	65	2.46%	0.56%	0.48%	34	30.36%	33.7
IDEAS	59	2.23%	0.51%	0.44%	26	23.21%	37.4
DESIGN	58	2.19%	0.50%	0.43%	22	19.64%	41
KNOWLEDGE	58	2.19%	0.50%	0.43%	32	28.57%	31.6
FACTORS	55	2.08%	0.47%	0.41%	26	23.21%	34.9
PLATFORMS	55	2.08%	0.47%	0.41%	24	21.43%	36.8
PRODUCT	54	2.04%	0.46%	0.40%	17	15.18%	44.2
DEVELOPMENT	52	1.97%	0.45%	0.38%	26	23.21%	33
PROCESS	52	1.97%	0.45%	0.38%	34	30.36%	26.9
OPENINNOVATION	51	1.93%	0.44%	0.38%	29	25.89%	29.9
MOTIVATION	50	1.89%	0.43%	0.37%	17	15.18%	40.9
PARTICIPATION	48	1.81%	0.41%	0.35%	29	25.89%	28.2

CAPITAL	46	1.74%	0.40%	0.34%	14	12.50%	41.5
TASK	43	1.63%	0.37%	0.32%	17	15.18%	35.2
CROWDS	42	1.59%	0.36%	0.31%	27	24.11%	25.9
MODEL	42	1.59%	0.36%	0.31%	25	22.32%	27.4
PERFORMANCE	42	1.59%	0.36%	0.31%	19	16.96%	32.4
BUSINESS	40	1.51%	0.34%	0.30%	24	21.43%	26.8
PARTICIPANTS	40	1.51%	0.34%	0.30%	16	14.29%	33.8
QUALITY	39	1.47%	0.34%	0.29%	23	20.54%	26.8
IDEA	36	1.36%	0.31%	0.27%	21	18.75%	26.2
INFORMATION	36	1.36%	0.31%	0.27%	25	22.32%	23.4
OPEN	36	1.36%	0.31%	0.27%	20	17.86%	26.9
WORKERS	36	1.36%	0.31%	0.27%	13	11.61%	33.7
MARKET	35	1.32%	0.30%	0.26%	20	17.86%	26.2
TASKS	35	1.32%	0.30%	0.26%	19	16.96%	27
PROJECTS	34	1.29%	0.29%	0.25%	17	15.18%	27.8
WORK	34	1.29%	0.29%	0.25%	23	20.54%	23.4
INDIVIDUALS	33	1.25%	0.28%	0.24%	22	19.64%	23.3
ANALYSIS	31	1.17%	0.27%	0.23%	24	21.43%	20.7
CHALLENGES	31	1.17%	0.27%	0.23%	16	14.29%	26.2
UNDERSTANDING	31	1.17%	0.27%	0.23%	23	20.54%	21.3
COMMUNITY	30	1.13%	0.26%	0.22%	15	13.39%	26.2
CROWDSOURCED	30	1.13%	0.26%	0.22%	13	11.61%	28.1
MOTIVATIONS	30	1.13%	0.26%	0.22%	14	12.50%	27.1
RELATED	30	1.13%	0.26%	0.22%	18	16.07%	23.8

2.3 Crowdsourcing

2.3.1 Main crowdsourcing themes

Quantitative Content Analysis helped to identify the most frequent terms that are encountered in the literature and are illustrated in Table 1. The terms clearly depict the topic of this review by having crowdsourcing and crowdfunding among the most frequent terms. A surprising finding is that innovation is the first most frequent term after the topic terms, which reflects the high scholarly interest of using crowdsourcing not as an instrument of execution of simple tasks, but for knowledge and value creation. The list with the terms' frequency reveals as well the main stakeholders involved and the different names that are given, for example

participants, individuals, workers that tilt towards the side of the crowd as the contributor; individuals or firms as the initiator; and platforms as the intermediary. Then, task, process, work, model, project refer to more operational aspects of the crowdsourcing activity and innovation; and product refers to the crowdsourcing objectives. Lastly, participation appears naturally with a high frequency, as it is a prerequisite of the crowdsourcing activity' similarly; motivations appear frequently as they are the driving and engaging force to maintain the participation; and knowledge the objective and process facilitator at the same time.

Furthermore, content analysis made it possible to identify the phrases that are most frequently discussed in the research papers and are shown in Table 2. The phrases help to connect the entities that were previously revealed and to understand which concepts these entities construct. For example, crowdsourcing platforms are crowdsourcing intermediaries; idea generation, product development, crowdsourcing innovation, product design are some of the applications of crowdsourcing; crowd capital is an asset for a successful project and social capital i.e. social interaction and communication and intellectual capital i.e. the domain skills of the crowd are the fuels in the crowdsourcing activities.

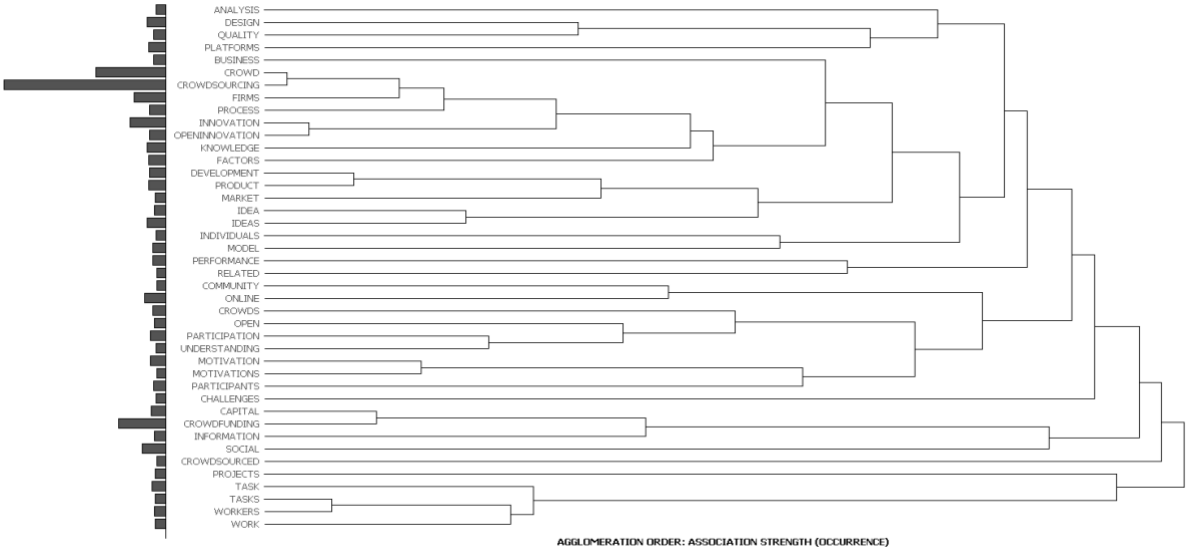
Table 2 Literature's most frequent phrases

	FREQUENCY	NO. CASES	% CASES	LENGTH	TF IDF
CROWDSOURCING PLATFORMS	20	9	8.04%	2	21.9
IDEA GENERATION	18	12	10.71%	2	17.5
MOTIVATION FACTORS	16	5	4.46%	2	21.6
SOCIAL CAPITAL	15	4	3.57%	2	21.7
PRODUCT DEVELOPMENT	14	8	7.14%	2	16
EQUITY CROWDFUNDING	13	4	3.57%	2	18.8
CROWDSOURCING INNOVATION	12	11	9.82%	2	12.1
CROWDSOURCING INTERMEDIARY	12	3	2.68%	2	18.9
BUSINESS MODELS	11	7	6.25%	2	13.2
CROWDSOURCING CROWDSOURCING	11	11	9.82%	2	11.1

ONLINE COMMUNITIES	11	8	7.14%	2	12.6
AMAZON MECHANICAL TURK	10	6	5.36%	3	12.7
INNOVATION PROCESS	10	9	8.04%	2	10.9
OPEN SOURCE	10	7	6.25%	2	12
CROWD WORKERS	9	6	5.36%	2	11.4
CROWDFUNDING CAMPAIGNS	9	5	4.46%	2	12.2
CROWDSOURCING INITIATIVES	9	6	5.36%	2	11.4
DESIGN CROWDSOURCING	9	4	3.57%	2	13
PRODUCT DESIGN	9	3	2.68%	2	14.1
BUSINESS MODEL	8	5	4.46%	2	10.8
CROWD MEMBERS	8	6	5.36%	2	10.2
CROWD PROJECTS	8	2	1.79%	2	14
CROWDFUNDING CROWDSOURCING	8	7	6.25%	2	9.6
INNOVATION CONTESTS	8	5	4.46%	2	10.8
PROBLEM SOLVING	8	7	6.25%	2	9.6
START UPS	8	1	0.89%	2	16.4
CROWDSOURCED JOURNALISM	7	3	2.68%	2	11
CROWDSOURCING CONTESTS	7	3	2.68%	2	11
CROWDSOURCING PROJECTS	7	4	3.57%	2	10.1
INTELLECTUAL CAPITAL	7	1	0.89%	2	14.3
MARKET PERFORMANCE	7	4	3.57%	2	10.1
ONLINE CROWDSOURCING	7	4	3.57%	2	10.1
PARTICIPATION CROWDSOURCING	7	5	4.46%	2	9.5
COLLECTIVE INTELLIGENCE	6	5	4.46%	2	8.1
COLLECTIVE INTENTION	6	1	0.89%	2	12.3
CORPORATE ENTREPRENEURSHIP	6	1	0.89%	2	12.3
CROWDSOURCING PLATFORM	6	6	5.36%	2	7.6
CROWDSOURCING PROCESS	6	6	5.36%	2	7.6
CROWDSOURCING PROJECT	6	3	2.68%	2	9.4
CROWDSOURCING SITES	6	1	0.89%	2	12.3
CROWDSOURCING VENTURES	6	4	3.57%	2	8.7
HIGH QUALITY	6	5	4.46%	2	8.1
PARTICIPATE CROWDSOURCING	6	4	3.57%	2	8.7
PUBLIC SECTOR	6	2	1.79%	2	10.5
TASK ATTRIBUTES	6	1	0.89%	2	12.3
TEAM PERFORMANCE	6	1	0.89%	2	12.3
APPLICATIONS CROWDSOURCING	5	3	2.68%	2	7.9
CROWD CAPITAL	5	2	1.79%	2	8.7
CROWD THEORIZING	5	1	0.89%	2	10.2
CROWDSOURCING FIRMS	5	4	3.57%	2	7.2
CUSTOMER PARTICIPATION	5	1	0.89%	2	10.2
DESIGN APPROACH	5	5	4.46%	2	6.8
FAIRNESS EXPECTATIONS	5	1	0.89%	2	10.2
INFORMATION ASYMMETRY	5	4	3.57%	2	7.2
INTRINSIC MOTIVATION	5	2	1.79%	2	8.7

LARGE NUMBER	5	4	3.57%	2	7.2
PIECE RATE	5	1	0.89%	2	10.2
PRODUCT IDEAS	5	4	3.57%	2	7.2
WISDOM CROWDS	5	5	4.46%	2	6.8

Figure 5 Dendrogram



The dendrogram in Figure 6 shows, in a hierarchical way, which entities have high correlation based on their co-occurrence in research papers. The entities with the closer distance appear first in a cluster. For example, crowdsourcing and crowd are linked, and then this cluster is linked with a sprig with the next closest cluster and so on.

The last step of the content analysis was to perform a topic extraction (Table 2). Cluster analysis made it possible to organise the reporting of the literature into sections with higher validity and representativeness. These topics were thematically grouped further into larger categories, with each reviewed in the section following. For example, platforms, projects and crowd became sections of the category “operational”, as all of those describe aspects related to the implementation of crowdsourcing activity. Open innovation and product development were placed under the category “innovation”, as they consist of the two innovation applications of crowdsourcing. The cluster of social capital carries a semantic meaning that is

cross-category; the social capital as a skill to attract, communicate and collaborate with individuals is an ingredient of successful firms, projects, platforms and crowd participants, and thus it is discussed indirectly in all the sections.

Table 3 Topic clusters

THEME CLUSTER		KEYWORDS	COHERENCE	FREQ	CASES	% CASES
PERFORMANCE	MARKET PERFORMANCE	QUALITY; PERFORMANCE; RELATED; MARKET; IDEA; IDEAS; MARKET PERFORMANCE;	0.347	72	32	28.57%
	CROWD PERFORMANCE					
INNOVATION	CROWDSOURCING INNOVATION/ OPEN INNOVATION	INNOVATION; OPENINNOVATION; FIRMS; CROWDS; BUSINESS; CROWDSOURCING INNOVATION; INNOVATION PROCESS; FIRMS INNOVATION; BUSINESS MODEL; BUSINESS MODELS;	0.348	144	45	40.18%
	PRODUCT DEVELOPMENT	PRODUCT; DEVELOPMENT; IDEAS; DESIGN; PRODUCT DEVELOPMENT; PRODUCT DESIGN; PRODUCT IDEAS; DESIGN CROWDSOURCING;	0.297	97	26	23.21%
OPERATIONAL	CROWDSOURCING PLATFORMS	PLATFORMS; CROWDSOURCING; MODEL; ONLINE; DESIGN; CROWDSOURCING PLATFORMS; CROWDSOURCING CROWDSOURCING; ONLINE COMMUNITIES;	0.33	321	87	77.68%
	CROWD PROJECTS	OPEN; PROJECTS; CROWD; COMMUNITY; UNDERSTANDING; KNOWLEDGE; CROWD PROJECTS; OPEN SOURCE;	0.34	121	62	55.36%
	CROWD WORKERS	WORKERS; TASK; TASKS; WORK; CROWD WORKERS;	0.274	65	21	18.75%

	MOTIVATION FACTORS	FACTORS; MOTIVATION; CROWDSOURCED; PARTICIPATION; MOTIVATION FACTORS; EXTRINSIC MOTIVATION;	0.297	81	28	25.00%
SOCIAL CAPITAL	SOCIAL CAPITAL	CAPITAL; SOCIAL; CROWDFUNDING; SOCIAL CAPITAL; INTELLECTUAL CAPITAL; TEAM PERFORMANCE;	0.238	119	33	29.46%

2.3.2 Crowdsourcing performance

The crowd as a solution provider and the role of the experts

Online crowdsourcing models became popular as the development of ICT empowered the swift communication and mobilization of a high number of individuals across the globe-the crowd. This introduced higher efficiency in problem-solving when compared to employing a small number of people. Such efficiency established the term “wisdom of the crowd”, a reputation that comes from the performance of the crowd and the related benefits it provides to organizations when implementing crowdsourcing and crowdfunding activities. Thus, the crowd, being negatively characterized through history as non-thinking and easy-to-manipulate masses, started being seen as problem-solver, innovator and conveyor of intelligence (Wexler, 2011). The benefits that are highlighted in the literature lie mainly in two dimensions: efficiency in processes and efficiency in quality. Efficiency in processes includes time and cost reduction; time because of the fast aggregation of distributed value and the orchestration of simpler, decomposed tasks or heterogenous collaboration in order to achieve more complex goals, and cost because of avoiding overhead employment expenses or employing a market research company, depending on the objective of the task (Gruner &

Power, 2017; Stol et al., 2019). Efficiency regarding quality is another important dimension. (Brabham, 2010) denotes that this wisdom of the crowd is a result of ideas aggregation and this collective power has the ability to outshine the excellence of an individual performance. (Franzoni & Sauermann, 2014) underlined that openness of participation and processes in crowdsourcing results in knowledge-related benefits derived from higher number of submissions(quantity can bring quality), human intelligence and intuition, access in rare and specialized skills, knowledge diversity from high human diversity, knowledge sharing and verification. (Hervé & Schwienbacher, 2018) presume that wisdom of the crowd also lies in the ability of making successful judgements or evaluations with the crowd norm counterbalancing outlying fallacies. Still, several scholars raise concerns on whether the crowd can make valid choices or contributions in innovation-driven and specialized projects, such as co-creating new products, participating in innovation processes or making investment decisions, where traditionally the requirement of expert participation is considered essential (Hervé & Schwienbacher, 2018; Keongtae Kim & Viswanathan, 2019). For example, in online crowdfunding, one study shows that the crowd predicts more successfully the credit quality of lenders compared to credit score and the accuracy is not far from econometricians that have complete access to financial information (Iyer et al., 2015). Keongtae Kim & Viswanathan (2019), show that professional investors seem to still determine the investment decisions, while Wang et al., (2019) supports that the influence of experts depends on the investors' size of the capital offering. . This differentiation of contributions is also supported in other domains of crowdsourcing, such as ideation contests or business model innovation, in which the crowd is found to submit fresher and more market-oriented ideas, while the experts submit more feasible and complete (Ebel et al., 2016; Poetz & Schreier, 2012; J. J. Zhu et al., 2017). Experts in the collective processes can be the ground in which the seeds of crowd skills can flourish and even play the role of "moderator" in order to bear the potential

costs, such as task fulfilment uncertainty, lack of experienced perspective, ambiguous credibility, irresponsibility from shared risk (Lüttgens et al., 2014; Muthukumaraswamy, 2010; O'Neil, 2010; Y. Tran et al., 2016). This debate though doesn't necessarily confute the crowd's reputation, because the crowd includes also experts (Brabham, 2012; Keongtae Kim & Viswanathan, 2019). The crowd can also indicate success and create opportunities for cases that experts see as red flags, as for example creative projects that an expert cannot recognize as marketable or low quality lenders that deserve a new opportunity (Iyer et al., 2015; Sørensen, 2012). Given the aforementioned, the literature supports the complementary nature of expert and crowd collaboration, in such a way that their collective inputs may lead to an extraordinary ferment.

Crowdsourcing to improve organizational and market performance

While one consideration is whether the crowd is able to provide substantial value to the organizations, a transposed consideration is whether organizations can capitalize on this value, improve their organizational performance and ultimately their market performance either directly through sales or indirectly through capital investments. Companies that use crowdsourcing or crowdfunding and have high adaptive capacity; they are open to changing information signals from the crowd and resilient to absorb them in their knowledge and processes (Gruner & Power, 2017; Stanko & Henard, 2017; Xu et al., 2015). This is further reflected in product sales. A crowdsourced product design improves new products usability and reliability and consequently increases their sales (Allen et al., 2018). Moreover, products that are marketed as crowdsourced are found to sell more units because the fact that are co-created *from* consumers *for* the consumers makes them being perceived as products that serve people's needs (Nishikawa et al., 2017).

There is also evidence that under certain conditions firms that employ crowdsourcing can capture value further traced in their investment and future stock market performance (Cappa,

Oriani, et al., 2019; Di Pietro et al., 2018; Hervé & Schwienbacher, 2018; Stanko & Henard, 2017; Xu et al., 2015). For example, in the context of crowdfunding, the crowd's involvement in the campaign activities can benefit the company in reaching its funding goals (Hong et al., 2018; Mollick & Robb, 2016; Thürridl & Kamleitner, 2016). Funders that believe in the success of a project or its social cause, advocate for it on social media (Hong et al., 2018; Kang et al., 2017). Moreover, the option of collaboration as a reward for funders that support financially a project is also linked with successful campaigns (Thürridl & Kamleitner, 2016). In any case, the feeling of recognition of investing one's self in a noteworthy action of supporting a promising project financially, its noble cause or participating in the creation of a fancy product mobilizes the funders to financially support and advertise their choice (Bretschneider & Leimeister, 2017; Mollick & Robb, 2016; Zilber et al., 2016). Crowd involvement in a fundraising campaign is also found to positively influence the future performance of the company after the campaign (Di Pietro et al., 2018; Hervé & Schwienbacher, 2018; Nishikawa et al., 2017; Stanko & Henard, 2017). This includes future fundraising, as the trust of crowd investors in the potential of the company and the established demand from the early consumers acts as a "collateral" for future investors (Di Pietro et al., 2018; Hervé & Schwienbacher, 2018; Mollick, 2016). Crowd participation also benefits future market performance (Stanko & Henard, 2017), as the social capital is transformed in intellectual and economic capital; the creation of a community around a product or service leads to network effects or innovation-related benefits (Lehner, 2013). The social capital organizations attract during the fundraising campaign in reward-crowdfunding was found to be an equally or more important predictor than the amount of aggregated capital (Roma et al., 2017; Stanko & Henard, 2017), while it further enhances the positive influence of innovation-related signals for future fundraising (Roma et al., 2017). Further to fundraising, Future stock market performance has also been found to be influenced

by firms that engage in crowdsourcing as innovation-related activities are perceived as a promising signal by investors (Cappa, Oriani, et al., 2019). Furthermore, this effect is more prominent in firms that choose to recapitalize their profits instead of distributing them to the stakeholders based on the explanation that investing in more resources enables them to increase their ability to leverage the crowdsourcing outcomes (Cappa, Oriani, et al., 2019). At the same time, though, crowdfunding companies that leverage on value creation are found to show higher post-campaign failure rates, a phenomenon worth studying further (Di Pietro et al., 2018; Walthoff-Borm et al., 2018).

2.3.3 Crowd innovation

Open innovation

The traditional firm relies for innovation in the intangible assets that are available inside the boundaries of the organisation. In the case of early ventures, the knowledge is usually bounded in the human capital of the project founders, thus, compared to the knowledge distributed out of the organizational boundaries, appears very limited (Lüttgens et al., 2014). Opening up these boundaries and successfully leveraging the external knowledge has been linked with the innovative performance of the firms (Laursen & Salter, 2006). This is particularly beneficial for new ventures to mitigate the impediments arising from their newness, small size and the entry barriers to the market (Gruber & Henkel, 2006). The distributed innovation process that comes from the erosion of organizational boundaries to enable "purposively managed knowledge flows, using pecuniary and non-pecuniary mechanisms in line with each organization's business model" is what (Chesbrough & Bogers, 2014) define as *open innovation*.

Crowdsourcing is considered major instrument for open innovation. This is based on the rationale that the wisdom of the crowd can create exceptional ideas or contributions and produce outstanding innovative outcomes (Cappa, Oriani, et al., 2019). In comparison with the other OI models, the key differences are related to the degree of openness to external parties, allocation of Intellectual Property (IP) rights, the compensation scheme, the existence or degree of hierarchical structure of power and control between the seekers and providers and the risks entailed from the erosion of organizational boundaries (Marjanovic et al., 2012; Stol et al., 2019). From the perspective of the previous key characteristics, crowdsourcing can be placed between the two "extremes" that are, on the one hand, open source innovation that has the character of peer production, absence of ownership rights, compensation schemes and control hierarchy and, on the other hand, outsourcing that has the character of employing a contractor with strict terms, as compensation agreed in advance and the decision-making and rights ownership mainly on the side of the employer.

Crowdsourcing for open innovation takes two forms: collaborative communities and competing challenges. Crowdsourcing communities are based on the accumulation of knowledge that derives from the collaboration of the members who through their communication and interaction provide comments, suggestions or skilled work that have a potential innovative outcome e.g. brand communities. In crowdsourcing challenges, the members are asked to find an innovative solution to a problem and compete with each other in order to find the best solution first and win the competition (Acar, 2019; Bayus, 2012; Felin et al., 2017).

The extent of how open are organizations to successfully produce innovations is closely related to the degree to which they *search for knowledge (open or knowledge search)*, more specifically, to the *breadth* and *depth* of the knowledge search (Terjesen & Patel, 2017); breadth is about expanding the spectrum of knowledge and accessing many diverse

resources; different people, domains, sectors, perspectives, skills, expertise; while depth is about the extent to which organizations harness this external knowledge resources. Crowdsourcing is considered as a means to maximize the breadth and depth of the knowledge search. From searching only inside the organization, it extends it to theoretically "infinite" external space and resources, providing a fertile ground for open innovation (Afuah & Tucci, 2012). In the context of crowdfunding, depth of knowledge search was found to have links with market performance and the breadth with radical innovation and product differentiation (Stanko & Henard, 2017). Feller et al., (2012) approaches crowdsourcing as innovation networks with three processes needed to be enabled: knowledge mobility, that includes the facilitation of stimuli, information exchange and acquisition; innovation appropriability, as the ability to capture and distribute value in a fair way; and dynamic stability of the innovation network, as an agile and sustainable engagement in innovation activities with strong adaptation in changes and the entrance/exit of participants (Dhanaraj & Parkhe, 2006; Feller et al., 2012).

Innovation enablers in crowdsourcing – crowd competences

A keystone in innovation process is in attracting a big and diverse pool of contributors (Allen et al., 2018; Cappa, Rosso, et al., 2019; Feller et al., 2012; Hanine & Steils, 2019; Ketonen-Oksi et al., 2017; Steils & Hanine, 2016) High participation can ensure sufficiency of submissions and bring a diversity of skills and backgrounds in order to promote thinking out of the box and the creation of new knowledge. In addition to creative thinking, diverse participants enable the efficient execution of tasks (Steils & Hanine, 2016). A number of studies have identified ways in which organizations can attract participants. An important example of such an approach is to activate the right motivations (Cappa, Rosso, et al., 2019; Ketonen-Oksi et al., 2017; Lee et al., 2015). Relevant participations have also been found to further enhance innovation processes and knowledge creation. For this reason, firms with

strong brands can be more successful in leveraging innovative outcomes, since they can attract relevant participants, already familiar with their activities (Cappa, Rosso, et al., 2019; Feller et al., 2012; Steils & Hanine, 2016).

Depending on the objective, the crowd may contribute throughout the three stages of innovation: idea generation, the idea implementation and the idea diffusion. *Idea generation* includes all the mechanisms and processes in order to create the appropriate conditions for the creation of new, ground-breaking ideas; *idea implementation* is the stage where the selected idea becomes a plan, design and eventually a product or solution and *idea diffusion* includes the commercialization process of the creation (Muller et al., 2012; Scholz, 2015). The innovation performance of organizations greatly depends on the social capital they can leverage in their crowdsourcing innovation processes. Thus a number of papers dealt with identifying what are the required individual competences of the participants and how they are linked with better results in the open innovation stages. (Steils & Hanine, 2016) support the idea that a diversity of individuals' skills is needed to deal with the innovation process and task execution. The innovation processes and task execution require a great diversity of skills: technical, analytical, communicational and managerial (Steils & Hanine, 2016). Medium domain relevant skills (Mack & Landau, 2015) and an educational background that is at least partially related to the project were found in individuals who submit winning ideas, as background relevance helps individuals to have better understanding of the preferred outcome and thus provide more relevant ideas (Boons & Stam, 2019). In collaborative interactions, the quality of involvement of the crowd and the appropriateness of the solution are also expected to be influenced not only by individual competences but also by the intrinsic and extrinsic motivations such as learning and rewards (Acar, 2019). Surprisingly, although creativity is thought as a seed of innovation, highly creative individuals were not found to submit highly innovative ideas (Mack & Landau, 2015), neither ideas that are

selected by companies to get implemented, but were only related to high degree of idea generation (H. Zhu et al., 2014).

Innovation enablers in crowdsourcing – procedural aspects

Procedural aspects have been linked with the facilitation of innovation. An open call with diverse rewards can offer satisfaction to different types of individuals and attract diverse participants (Feller et al., 2012; Saxton et al., 2013). Moreover, the relationship of task description and participants motivation has been explored. Lengthy descriptions that include more constraints being perceived as restriction for reward-oriented individuals to participate, without affecting participants that are more intrinsically-motivated (Steils & Hanine, 2019). After the open call, organisations need to facilitate innovation enablers throughout the crowdsourcing process. Sharing and highlighting information will allow participants to build on previously produced knowledge and perform knowledge combination and integration (Malhotra & Majchrzak, 2014). Additionally, essential is the type of relationship that is built with the crowd. Trust, reciprocity, community identification and social rapport, shared language and vision between the project team and the crowd empower the collaboration and are found important in producing product innovations (Eiteneyer et al., 2019; Hanine & Steils, 2019).

2.3.4 Product development

Companies many times decide to crowdsource for New Product Development (NPD) (Allen et al., 2018; Elia & Margherita, 2018; Zahay et al., 2018; H. Zhu et al., 2014). A number of academic papers have dealt with what drives managers to select crowdsourcing for NPD (Allen et al., 2018; Gruner & Power, 2017; Ketonen-Oksi et al., 2017; Zahay et al., 2018). Innovation-related benefits connected with knowledge production are a core objective (Gruner & Power,

2017). Another reason is to refine a product in order to increase its perceived usability and meet consumer preferences (Allen et al., 2018; Gruner & Power, 2017; Nishikawa et al., 2017). Similarly, crowd funders may choose to run crowdfunding campaigns over traditional funding in order to crowdsource in parallel knowledge about consumer preferences (Nucciarelli et al., 2017; Scholz, 2015). Managerial and organisational factors also affect whether to crowdsource for NPD. Corporate leadership might want to promote more informed decision-making (Zahay et al., 2018). Moreover, the adaptive capability of the organisation influences how open a firm is in adopting new ways of creation and new processes for collaborations and integration of new knowledge (Gruner & Power, 2017; Ketonen-Oksi et al., 2017; Zahay et al., 2018).

Different gain in different stages of product development.

It is important to understand how beneficial and suitable crowdsourcing is for different stages of NPD. Findings have so far been ambiguous. On the one hand, there is evidence that companies many times crowdsource to find new product ideas (Bayus, 2012; Poetz & Schreier, 2012; J. J. Zhu et al., 2017). Other studies conclude that companies might prefer first to sketch a prototype and then employ crowdsourcing to deal more efficiently with the increasing technical complexity or commercialisation (Allen et al., 2018; Zahay et al., 2018; H. Zhu et al., 2014). One reason for this may be that crowdsourcing is relatively new for many organisations. In such cases organisations may want to create and test processes in an internal, safer environment and then use them to crowdsource externally (Zahay et al., 2018). In general, a common practice among inexperienced firms is to perform pilot crowdsourcing projects first (Zahay et al., 2018).

Another consideration is whether crowdsourcing is more suitable for front-end innovation or for product refinements at the later stages of testing and commercialisation. Evidence shows that companies that are in later stages of product development can still benefit from radical innovation (Stanko & Henard, 2017). The value that can be added in each stage of the product

development depends on several factors. For example, for certain product features, crowdsourcing can contribute towards improving perceived usability and reliability throughout all the development stages (Allen et al., 2018). Interestingly, perceived usability does not only increase because of actual feature refinements, but also as a result of consumers' assumptions on the value of products that are marketed as "crowdsourced" (Nishikawa et al., 2017).

2.3.5 Operational

2.3.5.1 *Platforms*

Platforms facilitating value creation as solver brokerages

Online crowdsourcing is carried out by platforms which act as intermediaries between organisations and the crowd. Their characteristics can combine in different extents the characteristics of an online marketplace and an online community (Marjanovic et al., 2012; Zogaj et al., 2014). They can accommodate the participants' listings, realise their agreements, enable incentives, participation and value creation while they obtain commission for their services (Ford et al., 2015; Marjanovic et al., 2012; Taylor & Joshi, 2019; Zogaj et al., 2014). The extent to which the platforms provide a conducive space for communication within the value-creation process defines how much platforms shift towards the community side (à Campo et al., 2019).

Based on the process of value creation platforms adopt, there are three categories (Kohler, 2015). First, platform integrators, which "buy" value from the crowd and "sell" it to companies, such as platforms that support crowdsourcing contests (Kohler, 2015). Then, product platforms, which resemble online collaborative communities, as open source communities, and aim to call the crowd to work on specific product refinements, and then sell it to the market

(Kohler, 2015). Last, multi-sided platforms with which the crowd and the crowdsourcers interact directly (Kohler, 2015). Crowdsourcing platforms have the mission to provide a solver brokerage system built on three pillars: a good network, appropriate knowledge facilitation and partnerships empowerment (Feller et al., 2012; Yuan & Hsieh, 2018). A good network is necessary to provide organisations with a pool of a high number and high variety of individuals, skills and talents, which are requisites for co-creation (Schmidt & Jettinghoff, 2016; Yuan & Hsieh, 2018; Zogaj et al., 2014). When the matching of appropriate actors is secured, knowledge facilitation mechanisms are necessary to ensure a productive crowdsourcing process. This includes all the digital affordances for knowledge management: sharing, organising, evaluating and storing (Yuan & Hsieh, 2018; Zogaj et al., 2014). Partnership empowerment refers to maintaining participation and engagement to fulfil the process (Yuan & Hsieh, 2018). There are many factors that can help to build these three pillars. An accommodating platform design is the ground to build on and this translates into several elements. A digital brand name with a clear purpose and good reputation helps to attract relevant stakeholders (à Campo et al., 2019). In addition, user-friendly website design helps to broaden participation by offering an inclusive environment for the less technology-skilled participants (Deng et al., 2016; Niu et al., 2019). High variety of functions can also enhance the crowdsourcing activity (à Campo et al., 2019; Deng et al., 2016; Kohler, 2018; Niu et al., 2019; Schmidt & Jettinghoff, 2016; Zogaj et al., 2014).

In addition to efficient performance of the crowdsourcing platforms, these three pillars are also important for their expansion. Network effects bring more participants, contribute to knowledge facilitation and create resilience to deal with fluctuations in the activity of crowd members (Kohler, 2018). Network effects depend on the availability of relevant stakeholders, which determines not only the expansion of platforms, but also the platform creation itself (Dushnitsky et al., 2016). For example, there is a higher probability for a crowdfunding

platform to flourish in countries where the market is big and there is entrepreneurial orientation (Dushnitsky et al., 2016).

2.3.5.2 *Projects*

The practical objectives of crowdsourcing can remain unfulfilled due to problems associated with project design and execution. Thus, attention is needed throughout all the stages of crowdsourcing to planning, open call, running the activity and evaluating the results (Chiu et al., 2014).

Pre-activity decisions on how to crowdsource/on participations and task execution

The decision making for designing a fruitful project is determined by four areas: user participation, the type of the task, process management and the expected outcome (Chiu et al., 2014; Saxton et al., 2013; Ye & Kankanhalli, 2013). User participation can be in the form of open/closed collaboration or competing challenges (Chiu et al., 2014; Ye & Kankanhalli, 2013). In open collaboration, the requirements are absent or loose (Chiu et al., 2014; Ye & Kankanhalli, 2013). This type of participation is more suitable for tasks that are harder to decompose, have less defined goals and accumulation of knowledge through cooperation is an objective (Niu et al., 2019; Ye & Kankanhalli, 2013). In the closed type of collaboration organisations apply strict criteria or pre-screening of candidates (Chiu et al., 2014; Ye & Kankanhalli, 2013). Closed collaboration is preferable for problems that need longer time to get solved (Niu et al., 2019; Ye & Kankanhalli, 2013). Competing challenges, on the other hand, do not promote collaboration and the task has clearly defined requirements and outcomes (Chiu et al., 2014; Ye & Kankanhalli, 2013). They are most suitable for tasks where the evaluation of submissions is easier and the initiator expects high diversity of solutions (Chiu et al., 2014; Niu et al., 2019; Ye & Kankanhalli, 2013). After choosing the type of participation,

organisations need to select the right model, by taking into account the nature of the expected outcome, whether it is objective (e.g. microtasking) or subjective (e.g. idea crowdsourcing), whether the submissions need to be aggregated (e.g. votes) or filtered (e.g. creative solutions), where the crowd will originate from, inside or outside the organisation, the form of co-creation, collaborative or independent, and the IT platform, inhouse or external (Ford et al., 2015; Prpić et al., 2015). Another consideration is whether to use paid or unpaid crowdsourcing. In unpaid crowdsourcing, recruiting participants can be more challenging and delivering the task more time demanding (Borromeo & Toyama, 2016). Special attention is required to choose a task that is realistic and solvable and can be defined and decomposed (Ford et al., 2015; Lüttgens et al., 2014). Last, focusing on one project at a time and creating a preliminary baseline for the crowd to work on have also been considered as success factors (Stol et al., 2019; Y. Tran et al., 2016; Zahay et al., 2018; H. Zhu et al., 2014).

Designing the call for participations and orchestrating the activity

Following planning, a project announces an open call for participation. A precise description with timeline, requirements and expected goal create ease for an individual to assess whether they are interested and suitable for the project (Bush & Balven, 2018; Girdauskiene et al., 2015; Niu et al., 2019; Tokarchuk et al., 2012). At the same time, incentives should be realistic and IP policy needs to be stated clearly to indicate that the participants' effort will be valued and not misused (Franke et al., 2013; Hanine & Steils, 2019; Zogaj et al., 2014). Last, task instructions need to reflect the nature of the expected solution and how it balances the specifity of the outcome e.g. feasibility over creativity (Steils & Hanine, 2016).

Running a crowdsourcing activity is a multidimensional mission. Selecting participants and assigning the tasks, if needed, can be either based on self-selection, on a qualification test or on experts' evaluation on the participants' personality, skills and experience (Dissanayake et al., 2015; Niu et al., 2019; Stol et al., 2019; Y. Tran et al., 2016). In addition, recognition as an

acknowledgement, reward or social approbation honours participants' effort and motivates them to do their best (Bush & Balven, 2018; Hanine & Steils, 2019; Schäfer et al., 2017). Effective communication combined with transparent regulations and procedures promote accountability and trust (Hanine & Steils, 2019). Building trust safeguards against knowledge spill overs (Zogaj et al., 2014). Among the best practices are the ongoing monitoring of the process and allowing revisions (Ebel et al., 2016; Zogaj et al., 2014). Assigning employees of the organisation or crowd members as crowd leaders is also suggested (Ford et al., 2015; Franzoni & Sauermann, 2014; Lüttgens et al., 2014). Crowd leaders resemble project managers. They help to facilitate the process and motivate the participants. Social facilitation and interaction can be helpful, especially in tasks that have a higher degree of interdependencies and crowd members need to be aware of other people's progress (Feyisetan & Simperl, 2017; Ford et al., 2015; Franzoni & Sauermann, 2014; Niu et al., 2019; Y. Tran et al., 2016).

Validating and integrating new knowledge

Validating or evaluating the results can be either an internal corporate process or carried out by the crowd community (Niu et al., 2019; Stol et al., 2019). Companies may evaluate the results manually, by assigning the work to employees or experts, or perform it automatically by using quality assurance tools (Niu et al., 2019; Stol et al., 2019). Another way is community evaluation, where the crowd performs validation by rating, voting or testing as in a peer-reviewed process, sometimes followed by a secondary validation from experts (Niu et al., 2019; Stol et al., 2019). Data validation is quite important not only to ensure the correctness or appropriability of a solution, but also the originality (Stol et al., 2019). Submitting "stolen" solutions can result in reputation-related consequences or IP rights disputes (Stol et al., 2019).

Sometimes solution seekers, overwhelmed by fears and a lack of experience, approach crowdsourcing with reservation and do not invest efficiently in the activity. Concerns about

revealing technological or managerial knowledge or not reaching the expected outcome drive them to provide limited effort and stagnated communication, which hinders the knowledge creation process (Gruner & Power, 2017; Hanine & Steils, 2019; Lüttgens et al., 2014; Marjanovic et al., 2012). At the same time, established corporate power dynamics might create obstacles for incoming knowledge (Ford et al., 2015; Lüttgens et al., 2014; Marjanovic et al., 2012). In order to deal with the organisational inertia, managing the process and integrating the produced knowledge may require change management (Ford et al., 2015; Lüttgens et al., 2014; Marjanovic et al., 2012).

2.3.5.3 *Crowd*

The impact of crowdsourcing on the crowd

An analysis of published media revealed that most of the public attention is drawn to the benefits and challenges organisations have in crowdsourcing, while the benefits and challenges from the crowd's perspective have been neglected (Sheehan & Pittman, 2019). There is indeed evidence that crowd participants are found to benefit for their personal development by engaging in the creation process through experiential and social learning (Steils & Hanine, 2016). But even in the case of paid microtasking of unskilled work where the crowd participants do not interact at all with each other, they are found to carry the feeling of professional solidarity and community (Almaatouq et al., 2019; Schmidt & Jettinghoff, 2016).

At the same time, certain elements might provoke negative feelings that undermine these benefits. Crowd participants are concerned about the use of their contribution and intellectual property rights, especially when there is not procedural transparency (Deng et al., 2016; Hanine & Steils, 2019). Consequently, this creates insecurity on whether their effort will be misused (Deng et al., 2016; Hanine & Steils, 2019). Research shows that, among all participants, trust

and commitment in the process affect the behaviour of participants that are more interdependent on the work of others (X.-L. Shen et al., 2014). In general, there are four types of worker marginalisation: economic, where the participants feel that their effort is taken advantage of; policy, where they cannot make efficient use of the crowdsourcing opportunities; technology, where they cannot deal with the usability requirements; and competence marginalisation, in which their work does not contribute to their personal development and competitiveness (Deng et al., 2016).

2.3.6 Motivations of participation

How different types of motivations influence participation

Enabling the right motivations can help to increase participation, attract the most suitable individuals and maintain engagement. Thus, an important part of the literature has made an effort to shed light on identifying the motivation mechanisms that can enhance the benefits of crowdsourcing activities.

One major form of motivation is financial compensation. The presence of a monetary reward is indeed considered important for drawing high participation (Brabham, 2008; Chit et al., 2017; Deng et al., 2016; Girdauskiene et al., 2015; Lee et al., 2015). This importance appears especially compelling for the less motivated users (Liu et al., 2012; Ren et al., 2019). However, research shows that the increase of the reward amount does not increase the number of participations proportionally (Cappa, Rosso, et al., 2019; Stol et al., 2019). Individuals might perceive higher monetary rewards as an indicator of a difficult or time-demanding (Cappa, Rosso, et al., 2019; T. Tran & Park, 2015). Nevertheless, the presence of the monetary reward itself was not found to outweigh the significance of non-monetary motivations (Cappa, Rosso, et al., 2019; Stol et al., 2019). Financial rewards have also been linked with the quality of

contributions, for example with more innovative and radical ideas (Lee et al., 2015; Mack & Landau, 2015). On the other hand, in microtasking, the accuracy of unpaid work is found similar to or even better than paid work (Borromeo & Toyama, 2016).

Career-related motivations have been identified in the literature as factors that can attract more participants in the context of more skill-oriented crowdsourcing. Learning is valuable for professionals, investors or entrepreneurs, who want to become more experienced (Baumgardner et al., 2017; Estrin et al., 2018) Learning motivates also amateur participants who want to engage in a creative job and improve their technical, cognitive and business skills or prepare for a future career (Acar, 2019; Brabham, 2008, 2010; Budhathoki & Haythornthwaite, 2013; Taylor & Joshi, 2019). Nevertheless, participants motivated by learning were not found to submit more innovative solutions (Mack & Landau, 2015). Peer recognition is also found to increase participation, as it offers individuals personal satisfaction and helps to find new professional opportunities (Brabham, 2008; Budhathoki & Haythornthwaite, 2013; Girdauskiene et al., 2015; Lee et al., 2015; Taylor & Joshi, 2019). The flexible working conditions were identified as important motivators as they provide greater working autonomy and independence (Acar, 2019; Deng et al., 2016; Lee et al., 2015; Taylor & Joshi, 2019). Learning, peer recognition and problem-solving motivations have been linked with appropriate submissions (Acar, 2019). In addition, motivation for autonomy is linked with innovativeness (Lee et al., 2015).

Individual factors always create a thirst for action, for example the need to satisfy a personal interest (Solemon & Bakar, 2018). The satisfaction of accepting a problem-solving challenge is also mentioned as mobilising participation (Aitamurto & Saldivar, 2017; Brabham, 2010; Lee et al., 2015; Taylor & Joshi, 2019). Furthermore, participation itself can offer fulfilment or fun, even in cases where the individual believes that their contribution will not influence

the result (Aitamurto & Saldivar, 2017; Brabham, 2008; Chit et al., 2017; Tokarchuk et al., 2012). For this reason, a gamified crowdsourcing activity can increase participation and engagement, especially for the less-motivated users, as it makes the experience more delightful and entertaining (Feyisetan & Simperl, 2017; Liu et al., 2012).

Social interaction and community membership were found to increase participation (Brabham, 2008, 2010; Budhathoki & Haythornthwaite, 2013; Girdauskiene et al., 2015; Hajiamiri & Korku, 2015). Moreover, in mobile crowdsourcing they are also connected with the most active participants (Budhathoki & Haythornthwaite, 2013; Liu et al., 2012). Being a member of a community helps to understand it better, learn from others' perspectives and find support (Aitamurto, 2015; Aitamurto & Saldivar, 2017; Hajiamiri & Korku, 2015; Tokarchuk et al., 2012). Interestingly, the social dimension of crowdsourcing was found to be important even in paid microtasking, which is individual and there is no social learning taking place at all. Working with the presence of others has been found to improve accuracy and engagement of workers (Feyisetan & Simperl, 2017). On the other hand, in individual innovation-related activities there is the concern that social facilitation can reduce innovation outcomes by peer influence and the homogenisation of contributions (Felin et al., 2017).

Altruism can also mobilize participation (Aitamurto, 2015; Cappa, Rosso, et al., 2019; Girdauskiene et al., 2015, 2015; Solemon & Bakar, 2018, 2018; Tokarchuk et al., 2012). The fulfilment of working for a higher purpose, the idea of improving the society or reducing a societal problem motivates individuals to contribute (Aitamurto & Saldivar, 2017; Cappa, Oriani, et al., 2019; Girdauskiene et al., 2015). On the contrary though, supporting a crowdfunding campaign with a social orientation does not seem to influence the funders' decision (Motylska-Kuzma, 2018). Altruism in the sense of supporting democratic means and egalitarian ways of working has also been identified by a study as an important driver (Aitamurto, 2015). Although altruism increases participation, it does not necessarily mobilise

the individuals to provide appropriate contributions (Acar, 2019). The participation of individuals itself might satisfy their feeling of duty and they consequently feel that they do not need to put in additional effort (Acar, 2019).

Another determining set of motivation factors illustrated in the literature is the category of task-related factors. A clear-cut, realistic description with specific requirements and timeline are important to attract a high number of participants (Girdauskiene et al., 2015; Niu et al., 2019; Tokarchuk et al., 2012). In this way, individuals can better judge whether the task is suitable, feasible, interesting or enjoyable for them to participate in. Also, fair compensation, procedural transparency and sufficient communication make participants feel useful and valued and maintain their involvement throughout the activity (Deng et al., 2016; X.-L. Shen et al., 2014). The feeling of being valued can be further enhanced by feedback, but in the case of paid microtasking the evidence is controversial. Expressing gratitude appears to have a positive influence, but performance feedback before fulfiling the task seems to demotivate workers from completing it (Straub et al., 2015).

Maintaining the equilibrium of engagement

Crowdsourcing is based on an open-call, where the tasks are assigned based on crowd self-selection and motivation for the projects. However, it is essential to engage until the end and fulfil the task. Not all the motivations that mobilise the crowd to participate are strong factors for their long-term engagement and once the initial motivations are satisfied, the participants disengage (Acar, 2019; Aitamurto & Saldivar, 2017). An efficient approach is to target the most suitable participants carefully, identify what motivates them most and establish an ongoing motivation system from the open call to the end of the project (Ren et al., 2019). This can help to maintain the high quality of contributions at each stage of crowdsourcing and also increase the participants by mobilising the less frequent contributors (Franzoni & Sauermann, 2014). A crowdsourcing activity is an ongoing battle of trying to keep the equilibrium of

engagement by strengthening the factors that empower the crowd and minimising those that provoke resentment (Deng et al., 2016).

2.4 The crowdfunding ecosystem

2.4.1 Crowdfunding as a form of crowdsourcing

Crowdfunding as a process of exchanging or extracting value-monetary in this case- from a large and diverse group of individuals -the crowd- was first introduced in the literature as part of the broader concept of crowdsourcing. Howe was one of the first to define crowdsourcing as the act of assigning a task that would be traditionally fulfilled from employees of a company to individuals or teams outside of an organization i.e. outsourcing, but through an open-call invitation directed to an heterogenous, indistinct and vast pool of people (Howe, 2009). This prior definition was later updated by Kietzmann, who argued that crowdsourcing nowadays is facilitated by "the use of IT to outsource any organizational function to a strategically defined population of human and non-human actors in the form of an open call"(Kietzmann, 2016). Thus, in short, crowdsourcing is when an individual, a team or a company turns to the crowd mainly over the Internet to secure ideas and information; goods or services, unskilled or that require knowledge and expertise.

From those definitions it is apparent that crowdfunding and crowdsourcing are closely associated concepts, an idea supported by many scholars(Alfiero et al., 2014; Gleasure & Feller, 2016; Julien, 2007; McKenny et al., 2017). Specifically, crowdfunding is often described as an amalgam of crowdsourcing and microfinance, as it borrows from crowdsourcing the part of obtaining ideas, goods or services from the crowd and from the microfinance the offering of small monetary contributions, with specific categories of

crowdfunding, like online microlending, having even closer relation to microfinance as they aim to support unprivileged parts of populations(Harrison, 2013; Mitra, 2012). Hence, crowdfunding is considered the crowdsourcing of venture capital online (Hefner).

2.4.2 Stakeholders in crowdfunding

In online crowdfunding there are certain parties involved: the *capital seekers (CS)*, the *capital providers (CP)* and the intermediaries (Moritz, 2016). The capital seekers can be individuals or companies that need capital because of financial shortage, to materialize their entrepreneurial or creative ideas, start or expand their business or promote a good cause. The capital providers on the other hand participate to offer financial support either to gain some sort of tangible or intangible benefit or mobilized by their individual interests or feelings of empathy and altruism.

2.4.3 Crowdfunding platforms

In the middle of this two-sided market[3] (Belleflamme & Lambert, 2014; Bouncken et al., 2015; Lacan & Desmet, 2017; Mamonov, 2019; Rochet & Tirole, 2003; Viotto da Cruz, 2015), the *crowdfunding platforms(CFPs)* act as the principal functional intermediary(Merton, 1995; Sarkar et al., 1995) that connects the physical and the digital world and becomes a mediating and moderating instrument in the interest of funding and entrepreneurship. It is indicative that several significant online intermediaries have started or

[3] Two-sided markets are markets that enable interaction between two distinct groups of agents where both sides create value and benefit from the network effects(Rochet & Tirole, 2003)

invested also in crowdfunding platforms, for example online technology companies as Google in Indiegogo(Mach et al., 2014) or online retailers as Alibaba with YuleBao.

At first, CFPs enable the online participation of diverse people and this way they help to reduce the search and transaction costs and allow to build the critical social capital needed in the fundraising/investing process through matchmaking from a pool of projects and investors, a matchmaking that would be more limited in the physical world. Furthermore, they provide the necessary technology and marketing tools in order to build the digital image of a project and establish information sharing, inform about its characteristics, disclose information about the company activities and financial status, so that they can reduce information asymmetry, cultivate trust and transparency in transactions and promote successfully a campaign. This information sharing along with ideas exchange between the actors fosters business opportunities(Belleflamme & Lambert, 2014; Cappa, Rosso, et al., 2019), enhances the competitive advantage of the participants who have access in this market and attracts even more audience (Yud, 2018). In this way, crowdfunding platforms act as mediators between fund seekers and fund givers in the online funding transactions.

Their role though is more than the digital mediation of the transactions. They set the rules of the interactions, regarding the model adopted, the business domain spectrum, the fundraising process and the payments. Some platforms follow the “all-or-nothing” model where only projects that reach their goal get funded, others the “keep-it-all”, where the project can go with the amount they managed to collect, while some platforms leave this upon the entrepreneur’s discretion, like in Indiegogo(D. J. Cumming et al., 2015). This “all-or-nothing” approach means that if a project does not reach its target, it does not receive the promised money (Mitra, 2012). This is considered as a way to protect funders (Bradford, 2012). Some platforms are industry-specific, focused for example in the creative industry or technology and others are more diverse. This diversity extends in the crowdfunding models

they offer, from CFPs providing only one type and others combining two or more, like reward-based and equity crowdfunding [put some examples here]. What crowdfunding platforms gain is usually profit by applying commission to the funds collected in a successful crowdfunding campaign, such as 3-5% of the funds raised, or membership fee(Miller, 2019), but sometimes they gain revenues also by offering side marketing or consultancy services such as campaign curation and crowd fundraising consultancy. And, although a typical, common declaration in the terms of service of crowdfunding platforms is that the platform doesn't look after the projects' performance, that is not responsible for losses entailed by the transactions and doesn't mediate disputes, aside this liability disclaimer, the platforms try to encourage also rules about reliability, honesty and consistency, follow up with user complaints and in some cases intervene and suspend the campaigns, e.g. the Anonabox case where the innovativeness of the promised product was questioned on the premises that it was not different from commercial products already available in the market(A. Greenberg, 2014). The CFPs have an essential part to facilitate through the platform functions a certain level of transparency and credibility in order to reduce information asymmetries and build an environment of trust in the crowdfunding ecosystem. In this way, crowdfunding platforms act as moderators in the online funding transactions.

Its noteworthy that the role of online crowdfunding intermediary is not always exclusively the online crowdfunding platform. In some cases the platforms collaborate with local institutions in order to perform a first screening of the lenders or provide information about the model or consultancy for their campaign prior joining the platform and seeking for capital, as in the case of social P2P lending and Kiva which collaborates with MicroFinance Institutions(MFIs) (Dorfleitner & Oswald, 2016).

2.4.4 Categories of crowdfunding

There are four major categories of online crowdfunding that differentiate on the business model they use for funding. These are lending-based, reward-based, equity-based and donation-based(Agrawal, 2014; Dushnitsky et al., 2016; Hoegen et al., 2018; Janků & Kučerová, 2018; Medina-Molina et al., 2019; Mitra, 2012; Moritz, 2016; Short et al., 2017). This categorization is based on various criteria related to the nature of the project(e.g. creative, commercial, social) and the main motivations and expectations of the funder(e.g. extrinsic or intrinsic, financial or ulitarian (Cholakova & Clarysse, 2015)). More specifically, they can be categorized on whether there is a return on investment(lending-based, reward-based, equity-based) or not(donation-based), whether the model is for profit(lending-based and equity-based) or not(reward-based and donation-based), or whether the motivations for a financial contribution are purely altruistic and the funds are raised for a good purpose(donation-based crowdfunding or social lending where the loans are usually interest-free). Other scholars approach it on whether the returns are definitive(like in patronage and debt) or uncertain and dynamic(like charity and equity (Gleasure & Feller, 2016)

Every crowdfunding model has different functionalities to offer and is necessary for a project to assess the specific features and decide which will be more beneficial for a every project depending on their character, venture stage and funding cycle stage. The rules, the complexity and the risk, the regulations involved and the relationship with the crowd and what it can be gained from this interaction(Belleflamme & Lambert, 2014) differ from model to model.

2.4.4.1 *Reward-based crowdfunding*

Reward-based crowdfunding is one of the most popular models across the industry especially among creative projects or individuals/startups that do not meet the requirements for traditional lending (Janků & Kučerová, 2018). The capital providers in this case are called pledgers or backers, as one important motivation is to support the effort of an entrepreneurial or creative project. It is also called crowd patronage[4] and the backers patrons as their participation has a strong the character of embracing the project/product.

Although it is not profit oriented, the funders are rewarded for their contribution. The return of investment in this model is not monetary but in kind, such as a gesture of recognition e.g. some artists mention the name of the contributor in their credits, letters of gratitude, a promotional symbolic gift or a meeting with the creators(Presenza et al., 2019). In rare occasions, reward is given to tempt the investor to become a shareholder, as in Crowdcube (Cholakova & Clarysse, 2015; Rogan & Sarfati, 2018). Usually there is a hierarchy in the type of the reward which is proportional to the financial contribution of the backer: the highest it is the bigger the reward. A high contribution gets as a reward an early prototype or the final product in a special price, lower than the price of the product when it gets commercialized. The process in the latter case resembles the commercial preordering/preselling of a product (Cho & Kim, 2017; Mitra, 2012) only that in this case, depending also on the nature of the project, there is not a clear idea of the final good and its quality and the backers mainly rely their decision on factors related to social dynamics, fundraiser preparedness, communication and project information. In this scenario, some entrepreneurs may use reward-based crowdfunding as the first step of their fundraising process in order pitch their idea or pilot test their product in the consumer market at small

[4] Patronage is the action of supporting someone or something as a patron i.e. father

scale, receive genuine feedback and reformulate it/proceed to improvements in accordance to the consumer preferences before they fully commercialize it. The funders in a such case are not only trial users but like early costumers that will have the advantage of enjoying first a unique or entrepreneurial creation in special price, as research shows that hedonism is one of the most important motivations for pledging in a reward-based campaign and pledgers are interested for the product itself (Cholakova & Clarysse, 2015; Hoegen et al., 2018) and can even act as brand advocates through social media (Yud, 2018). Hence, it allows for a price-discrimination by segmenting the consumers in early and late buyers, with the early being those who are more connected to the image of the product and choose to purchase even before its production and those that will wait for the product to enter the consumer market in order to consider buying it (Belleflamme et al., 2014). This is considered as a good practice when the requested funds are not very high and the profitability from preselling on special price can be afforded to remain reasonably low (Belleflamme et al., 2014; Paoloni et al., 2019). On this premises, through this preselling scheme within the fundraising process they can test their idea potential and feasibility at a relatively low risk and cost compared to functioning in the free market, and create an initial client portfolio that later, in a following fundraising process, such as equity crowdfunding, can be presented as a demand indicator to convince potential investors for funding and benefit in the negotiations for the shares and ownership of the company (Brown et al., 2018; Fleming & Sorenson, 2016).

2.4.4.2 *Donation-based crowdfunding*

Donation-based crowdfunding is the type of crowdfunding that the capital-providers, motivated by feelings of empathy and altruism (Burtch et al., 2013; Meer, 2014), offer a financial support for a good purpose, contribute to the common good or to the solution of a

local social problem (Presenza et al., 2019). The projects include charities, disaster relief, art projects or they are run by non-profit organizations. The funders are motivated by their faith in the cause or trust in the organization which runs the campaign or they also might be personally involved. The contribution has the character of philanthropy and the funders do not expect a financial or utilitarian reward but the satisfaction is more personal (Gleasure & Feller, 2016); thus, the funders are called donors and some scholars in the literature call this model charity crowdfunding (Fleming & Sorenson, 2016). Although the motivation is not to get a tangible reward, in some cases there can be a sort of credit for their contribution, as it happens sometimes in charities, like mentioning the donor's name in the list of supporters or receiving social recognition and enhancing their reputation. In cases of larger contributions, donors may also benefit from side benefits such as tax reductions or promote the image of a socially responsible company (Lehner, 2014). In donation-based crowdfunding, the campaign goal is more conceptual compared to the other models(Beaulieu et al., 2015), as the projects do not have a professional but a social character and the donors don't expect a return of investment. For this reason, there is not a need for process of business progress evaluation and donation-based crowdfunding is characterized by less complexity and risk compared to the other forms of crowdfunding (Hossain, 2017). Compared to traditional charities, donation-based crowdfunding may create a greater sense of trust in the processes and transparency in charities, since relevant project information updates are a core characteristic of a successful campaign, and this way, the donors may follow-up with the result, which is the main reward in this crowdfunding model, and confirm that their contribution was worthwhile(Beaulieu et al., 2015).

2.4.4.3 *Debt-based crowdfunding*

Debt-based Crowdfunding has been used as an umbrella title for what is known as peer-to-peer(P2P) and peer-to-business(P2B) lending, crowdlending and online social lending (Craig R. Everett, n.d.; Gleasure & Feller, 2016; Viotto da Cruz, 2015). Sometimes different authors give slightly different meaning when using a specific title, but in this work with debt-based crowdfunding we will be referring to the general connecting concept behind this models by approaching it as a broad category of personal(peer-to-peer) or small business(peer-to-business) loans which instead of being issued by a financial institution e.g. bank, are aggregated from the crowd over the internet and are repaid in periodic installments over a fixed period of time (Janků & Kučerová, 2018; Mach et al., 2014). These loans are usually of low or medium amount and of specific purpose e.g. student, consumer or professional loans. One loan can be collected either by many lenders or only by one, as in happens in the platform Prospers Whole Loan(Fleming & Sorenson, 2016). Whether they have interest or not depends on the character of the platform. In social lending, like Kiva, the loans are usually interest free, as the purpose of the platform is to help vulnerable groups such as individuals from developing countries or in the margin of poverty that lack financing opportunities to improve their quality of living. But even when the loans have interest, this is usually lower than the one offered by the traditional institutions. This characteristic in combination with a feeling of distrust in the financial system, placed the debt-based crowdfunding as a disruption of the FinTech for allowing not only groups of borrowers that face financial exclusion because of no or bad credit score but also eligible borrowers and small SMEs that find crowdfunding convenient and choose to bypass the traditional financial intermediaries(Fleming & Sorenson, 2016; Mach et al., 2014). The risk in this model is considered relatively high(Beaulieu et al., 2015; Hossain, 2017) as the lenders, along with social criteria, expect their contribution to be repaid. For this reason, the borrowers post

demographic information, details about their project goals, current status, credit history from previous loans, if they have received any, or they get credit score from companies like Credit Karma in order to convince lenders to contribute to their loan. Indeed, lenders take into account these signals in order to make an investment decision and prior research identified a significant herding effect in online lending markets associated with low default rate(Zhang & Liu, 2012). Literature has demonstrated several elements as perceived signals of higher credit quality, such as publicizing accurate information(Moss et al., 2015), the existence or financial support from online friendships(Lin et al., 2013), while several factors seem to influence the investors' decision such as demographic information, for example borrower's gender and education level(Gavurova et al., 2018), the loan size, the loan term and the grace period(Dorfleitner & Oswald, 2016), the debt to income ratio(Gavurova et al., 2018). Debt-based crowdfunding has become so popular that banks, savings and loan organizations, for-profit investment funds, insurance companies, and mobile network operators began to vie for a share of the microfinance market (Bruton et al., 2015).

2.4.4.4 *Equity-based Crowdfunding*

Equity-based crowdfunding is more close to the traditional financing as the requirements for a campaign are more strict, costly and bureaucratic compared to the rest of the forms of crowdfunding, as it requires accounting, legal and other services, it is regulated and, for early stage companies, it also paves the way to the traditional financial markets via a successful IPO. Some scholars describe equity crowdfunding as a pre-initial public offering, but which is not possible to trade and has been quite difficult for investors to sell before the IPO exit, apart from infrequent cases in a later follow-on campaign (Coakley et al., 2018). An exception to this norm is offered by Seedrs that created a Secondary Market where investors

can buy and sell before the company exits or gets listed. In order a platform to offer equity crowdfunding services in a country the appropriate regulations need to be in place, otherwise it is considered illegal (Zilber et al., 2016). These regulations usually define the limits of the capital a company may receive or an investor may provide, as do for example the JOBS Act and the Chinese regulation. The return on investment here is not a reward nor interest over the repayment, like in reward-based or debt-based crowdfunding respectively. The investors provide capital in exchange for a share in the ownership of the company (Paoloni et al., 2019). The terms under which the investor will acquire equity is more or less negotiable depending also on the nature of the platform: in some platforms, that are more entrepreneur-led, the project founders set their own terms and make their valuations publicly available and its upon the investors to make the decision to assess and accept them, while in others that are more investors-led, the project team negotiates with VCs or other professionals the terms and then they are directed to accredited investors. Some platforms, as Seeders and Crowdcube, act also as a shares nominee, while the investor remains the beneficial owner. The risk in this form of crowdfunding is the highest among all, as the returns are not so fixed in time and the investors need to wait the company to start being profitable (Gleasure & Feller, 2016). Equity crowdfunding was very much related to early stage companies that because of lack of tangible or intangible assets such as credit history, mature products and services and strong client portfolio i.e. emerging companies which face the so-called funding gap. In the recent years it gained high popularity that extended even to well-established companies which traditionally would have easier access to borrowing (Ralcheva & Roosenboom, 2019) or companies that have already completed successful rounds of institutional financing(see example of Beta Bionics (Rosenblum, 2016)). Hence, it attracted more institutional and in general accredited investors and raised questions regarding how alternative it may remain in the future in terms of democratising access to capital and allowing financing of ventures that

are not traditionally of preference (Wang et al., 2019). Many scholars demonstrated several factors as determinants of a successful crowdfunding campaign, such as human capital(characteristics of founders such as number, age and gender (Ralcheva & Roosenboom, 2019), education and expertise (G. Ahlers et al., 2015), product characteristics such as certifications (Bapna, 2017), social capital(number of connections(Vismara, 2016), market demand, offering characteristics, ownership model (G. Ahlers et al., 2015), equity retention (G. Ahlers et al., 2015; Vismara, 2016), credit history, previous successful campaigns or overfunding in prior campaigns (Coakley et al., 2018), communication with the crowd (frequent updates brown et al 2018).

2.5 Crowdsourcing skills

The concept of crowd sourcing skills online has been becoming very popular with the development of online digital technologies and thus many models have been developed for this reason. An early and popular classification of the crowdsourcing activities is the one proposed by (Howe, 2009): collective intelligence, crowd creation, crowd voting and crowdfunding, while some authors approach microtasking (e.g. Mechanical Turk) as a separate category (Chiu et al., 2014). Based on the purpose that firms want to leverage communities for value creation, (Brabham, 2011) proposed four types of crowdsourcing: the knowledge discovery and management approach, where the purpose is to acquire information and knowledge on a problem, the broadcast search approach, where the purpose is to solve empirical problems, the peer-vetted creative production approach, where the purpose is to find new, innovative solutions, and distributed human intelligence tasking, where the goal is to process information that needs the natural human intelligence. A recent typology is the one proposed by (Estellés-Arolas et al., 2015)

Crowdsourcing has been seen by many scholars as a mean firms can use to innovate and its closely connected to open innovation (Bayus, 2012; Boons & Stam, 2019; Scholz, 2015). The traditional firm relies for innovation in the intangible assets that are available inside the boundaries of the organisation and in the case of early ventures the knowledge is usually bounded in the human capital of the project founders, thus, compared to the knowledge distributed out of the organizational boundaries, appears very limited (Lüttgens et al., 2014). Opening up these boundaries and leveraging successfully the external knowledge has been linked with the innovative performance of the firms (Laursen & Salter, 2006) and can help new ventures to turn their disadvantages to advantages by mitigating the impediments coming from their newness, small size and the entry barriers to the market (Gruber & Henkel, 2006). The distributed innovation process that comes from the erosion of organizational boundaries to enable "purposively managed knowledge flows, using pecuniary and non-pecuniary mechanisms in line with each organization's business model" is what (Chesbrough & Bogers, 2014) defines as *open innovation*.

The extent of how open are organizations to successfully produce innovations is closely related to the degree they *search for knowledge*, more specifically, to the *breadth* and *depth* of knowledge search (Terjesen & Patel, 2017); breadth is about expanding the spectrum of knowledge and accessing many diverse resources; different people, domains, sectors, perspectives, skills, expertise, while depth is about the extent to which organizations harness this external knowledge resources.

Crowdsourcing is considered as a means to maximize the breadth and depth of knowledge search because from searching only inside the organization, it extends it to a theoretically "infinite" external space and resources thus provides a fertile ground for open innovation. Depending on the objective, the crowd may contribute throughout the three stages of innovation: idea generation, the idea implementation and the idea diffusion. *Idea generation*

includes all the mechanisms and processes in order to create the appropriate conditions for the creation of new, ground-breaking ideas; *idea implementation* is the stage where the selected idea becomes a plan, design and eventually a product or solution and *idea diffusion* includes the commercialization process of the creation (Muller et al., 2012; Scholz, 2015). Crowdsourcing for innovation can take two forms: crowdsourcing communities and crowdsourcing challenges. Crowdsourcing communities are also based on the collaboration of the members who through their communication and interaction they provide comments and suggestions that have a potential innovative outcome e.g. brand communities. In crowdsourcing challenges the members are asked to find an innovative solution to a problem and compete with each other in order to find the best solution first.

There are multiple points related to this area when organizations do crowdsourcing for innovation. The first question here would be what makes an idea good. Good ideas come from rearranging -in a new and creative way- existing knowledge and this is maximized when the individual has a broad, domain-relevant knowledge base (Bayus, 2012). Crowdsourcing offers this crowd-base, thus, several organizations engage systematically in crowdsourcing for innovation and have even their own communities for this purpose. Idea generation through crowdsourcing includes ideas suggestions that propose a new feature, product or solution, originate from a variety of domains, reflect ideators-idea creators preferences and sometimes they even include some clues on how to implement it, but in certain cases they might be a bit superficial and short (Bayus, 2012). Scholars have highlighted that the creativity or freshness of an idea is not sufficient by itself; appropriateness in terms of meeting the constrains of the problem, implementation feasibility and market potential are very significant (Acar, 2019; Bayus, 2012; Boons & Stam, 2019). Another question then is how to broaden the search for outside knowledge which can be interpreted as how to sustain the generation of “good” ideas through crowdsourcing and what

makes individuals to provide successful contributions. (Bayus, 2012) analysed messages from Dell's IdeaStorm community and suggested that expanding and renewing the consumer crowd base is critical for sustaining the production of quality and implementable ideas in order to deal with the cognitive fixation effect and enhance intercommunication that has positive effects on efficient idea creation. (Boons & Stam, 2019) found that individuals with a related or mixed educational background submit better ideas compared to participants that their background is completely irrelevant as background relevance helps individuals to have better understanding of the preferred outcome and thus provide more relevant ideas. (Mack & Landau, 2015) illustrate that creativity and domain-relevant skills are significant materials of participants that their idea submission wins in a crowd innovation contest. (H. Zhu et al., 2014) investigate the role of creativity and proactiveness of the individuals personality in the idea generation process. They find that creativity is of high importance in producing ideas but proactiveness is related to the acceptance of the idea. They link these attributes with users performance(commenting, submitting ideas, having ideas accepted) in an idea contest and identify four types of participants based on the level of contribution: follower, proactive promoter, creative innovator and intrapreneur. (Acar, 2019) explored the relationship of motivations with the solution appropriateness and found that intrinsic and extrinsic motivations of participants influence it positively, while learning and social motivation seem not to drive a good contribution. The relationship between intrinsic and extrinsic motivations and quantity and quality of contributions in a crowdsourcing innovation activity was also studied by (Lee et al., 2015) who identified reward, acknowledgement and recognition, competitive selection, topics with knowledge diversity, autonomy and informative task description increase the number of participations while reward, competitive selection, task complexity, autonomy are related to the innovative quality of submissions.

Using crowdsourcing appears to have many potential benefits for the organizations, such as externalizing the risk of failure, reducing the cost of task execution, accessing heterogeneous valuable knowledge, and remaining specialized in their core areas [I don't remember the references], but these benefits haven't been extensively measured empirically. Identifying the benefits and the sources of benefits can give the opportunity to strategically promote value co-creation and maximize the gains. But the literature has focused mainly in the challenges an organization faces that is related to the ability to identify and absorb knowledge from outside is very critical to leverage opportunities for innovation. In this direction, literature has focused mainly on how to manage crowdsourcing processes correctly, how to manage the crowd, how to incentivize, what are the challenges and risks and which is the most effective way to manage IP rights. (Lüttgens et al., 2014) highlights a series of challenges firms face when they implement crowdsourcing for open innovation in each stage of the process: initiation, contract negotiation, problem formulation, open call, evaluation of responses and reintegration. They raise the importance of building dedicated processes to coordinate the requested task and manage the incoming knowledge. (Franke et al., 2013) suggested that firms need to cultivate a climate of fairness when they engage in crowdsourcing activities, as it affects the willingness of participants to contribute and the gain of the company i.e. later monetary profits and reputation. They define fairness as fairness to the processes(procedural), whether there is transparency in the processes and the feeling of trust for open and egalitarian participation, and fairness to the deal between the company and the participants(distributive) regarding distribution of value and profit. They find that: the feeling of distributive fairness is lower when the profits announced in the terms of the process are higher for the firm, that unlimited IP rights for the firm and no support for the originator reputation e.g. somehow acknowledging their contribution. The feeling of fairness for participants that have previous crowdsourcing experience seem to be affected significantly mainly from the last two factors.

(O'Neil, 2010) argues that there are direct and indirect costs of relying to the wisdom of the crowd. The direct include uncertainty regarding the fulfilment and the quality of a task, lack of perspective, that only an expert that has deep knowledge of a matter can have, irresponsibility as in collective processes the risk is shared and there is no accountability and need for increased monitoring work because of all the previous and the anonymity or lack of credibility of the users. He supports that the role of the experts in the collective processes is unique and is the ground that the seeds of crowd work can be built. Building on the expert-crowd debate and whether experts are irreplaceable or need complements, the study of (Ebel et al., 2016) contributes by comparing the value of inputs by company experts and the customers in a crowd contest for business model innovation. They find that the crowd is able to submit more novel and relevant ideas compared to the experts indicating the usefulness of integrating.

3 Methodology

In this chapter, there will be a presentation of the methodological context of this study in terms of scientific research and design (3.1) and an overview of the research tools leveraged to build the study and reach the research outcomes (3.2-3.5).

Sections 3.1 presents the research design and the research types that this study follows under the business research methodology. This study employed Text Mining for conducting the Literature Review on Crowdsourcing, that was presented in Chapter 2, and this method is illustrated in the section 3.2 of the current chapter. Moreover, the empirical part of this study was based on interviews, that were processed through thematic analysis. The process of selecting interviewees, the thematic analysis and the description of the interviewees are presented in the sections 3.3, 3.4 and 3.5 respectively.

3.1 Research design under business research methodology

There are six widely acknowledged steps for scientific research that are usually followed no matter the nature or the approach of the research and these are adopted also in this study: identifying the research topic and searching the scientific literature, review the literature and define the research problem, determining how to conduct the research or the method by implementing the research proposal, collecting research data, then analyzing and interpreting this data and finally present the whole study through the implementation of the dissertation(Collis, 2014; Zikmund, 2009).

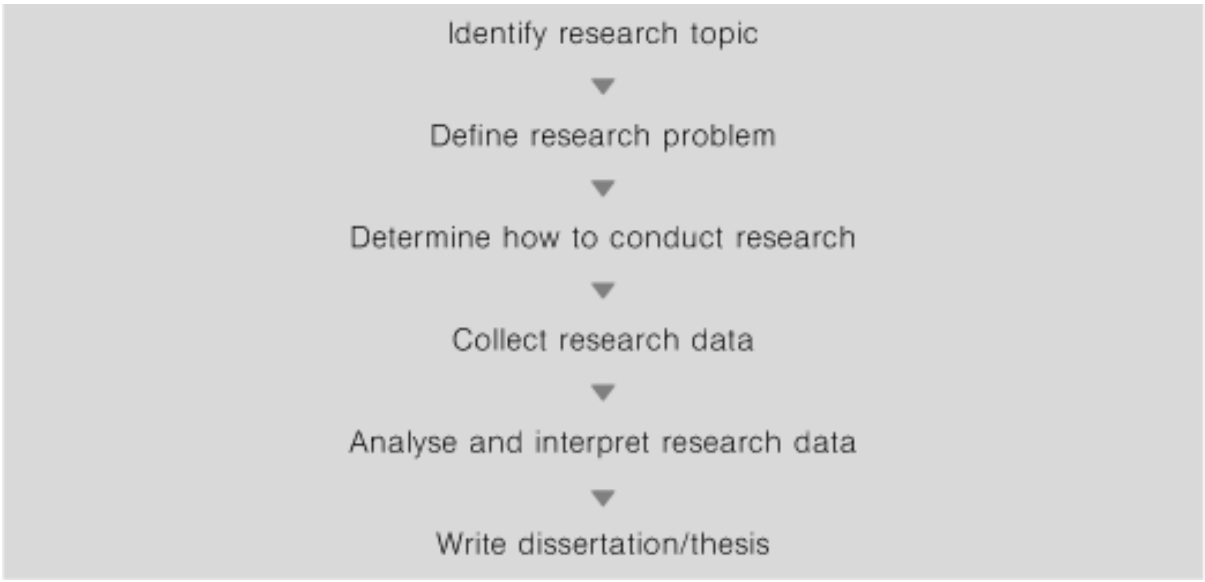


Figure 6 Research Process proposed by Collis and Hussey (2014)

According to Collis and Hussey (Collis, 2014), business research can be categorized by its purpose, the process it follows, the research logic that binds theory with exploration and results and the outcome . The categorization goes as follows:

- By process; quantitative, qualitative and mixed methods research
- By purpose; exploratory, descriptive, analytical and predictive research
- By logic; deductive or inductive research
- By outcome; applied or basic research

The empirical research of this study lies under the concept of qualitative exploratory inductive research and each definition will be further explained in the sections below.

3.1.1 Qualitative vs quantitative research

Traditionally research techniques are classified into quantitative and qualitative (Collis and Hussey, 2014) and recently there has been also the trend of using mixed methods that combine the previous two (Brewer, 2006).

Quantitative research refers to a quantitative approach in data collection, as in this case the data are of numerical nature. In other words, it includes the "quantification" of observations" (VandenBos & American Psychological, 2007). Further than that, it also includes numerical measurements and statistical analysis of the data. Generally, there has been a controversy in the scientific community regarding the subjectivity of qualitative research, as quantitative approaches are considered to be more objective. (Collis, 2014; Neuman, 1997) Apart from the nature of the data and the analysis, there are some other main differences between quantitative and qualitative research related to the research design in terms of stating specific questions or hypothesis and to the sample size, as in quantitative studies the sample sizes is usually significantly large (VANDERSTOEP & JOHNSTON, 2009).

Characteristic	Quantitative Research	Qualitative Research
Type of data	Phenomena are described numerically	Phenomena are described in a narrative fashion
Analysis	Descriptive and inferential statistics	Identification of major themes
Scope of inquiry	Specific questions or hypotheses	Broad, thematic concerns
Primary advantage	Large sample, statistical validity, accurately reflects the population	Rich, in-depth, narrative description of sample
Primary disadvantage	Superficial understanding of participants' thoughts and feelings	Small sample, not generalizable to the population at large

Figure 7 Differences between quantitative vs Qualitative Research by Vanderstoep and Johnston (2009)

Creswell (2013) defines quantitative approach as a technique for validating existing theories through analyzing relations between variables. Cohen (1980) refers to quantitative research as social research as it utilizes an empirical approach through which participants share their opinions. The variables used in quantitative analysis can be measured through tools such as surveys, and a data obtained can be validated through statistical methods. In other words it can be stated that the key elements of quantitative research are the relations between dependent and independent variables (Neuman, 2005).

Quantitative research is usually designed through experiments and surveys. Experimental designs are common in organizational studies and such approach seeks to explain and observe relations and factors between experimented subjects under certain experimental conditions (Keppel, 1991). Furthermore, according to Shadish et al. (2002) experimental designs can be classified as true experiment and quasi-experiment. In a true experiment,

subjects are assigned randomly, while in a quasi-experiment it is based on a non-random assignment. In such scenario quasi-experiments are a subject to internal validity threat (Shadish et al., 2002). On other hand survey is a type of non-experimental designs that is used to collect data from a sample of population through questionnaires in order to extend generalization of findings onto whole population (Welman et al., 2005).

A quantitative research study usually involves around five phases that were identified by few scholars, e.g. Pedhazur and Schmelkin (1991) and Shadish et al., (2002). These phases are: 1) introduction to a research as well as well-formed research problem and questions, 2) well-established theoretical framework or concept, 3) methodology that embodies research samples and assessment of external validity, research instruments that are used to test construct validity, research design that constitutes of internal validity assessment as well as data collection followed by data analysis and conclusion based on statistical validity 4) presenting of results and findings 5) conclusion and outcomes.

Although long established definitions of quantitative research place it in working with numerical data, recently advances in the means and research of digital communications introduced a new approach for this domain, which lies in "quantifying non quantitative observations", such as content in blogs and online discussions, by representing qualitative data in a quantitative way (Little, 2013).

This new domain is often called as "quantitative content analysis". This mehodogy was employed in order to develop the Literature Review in Chapter 2. Quantitative content analysis refers to the tools and methods used to derive statistical inferences from text populations by addressing "a well-defined text population, and provide an answer to the question having a known probability of inaccurately reflecting aspects of the text-population" (Roberts, 2000). Another definition stands as a set of systematic, rule-guided techniques to study and make specific inferences from primary or latent textual context information

(Philipp, 2000). The latter definition aligns with the rationale of choosing this methodogy to perform the literature review, as Quantitative Content Analysis allowed to organize the literature and draw inferences around the research gaps.

The empirical research of this study is based on a qualitative methodology. Qualitative research is considered more appropriate when the research questions attempt to understand the "what" and "how" around a research subjet (Hesse-Biber, 2017). This study placed two research questions:

RQ1: What are the perceptions of the crowd investors throughout the investment process in Equity Crowdfunding?

RQ2: What is the relationship between different types of investors and their perceptions throughout the investment process in Equity Crowdfunding?

These research questions aim to understand "what" are the main pillars of the decision-making of crowd investors and "how" their decisions are formed throughout the three stages of ECF. Hence, the author considered a qualitative research methodology more appropriate to implement this study.

Moreover, qualitative research follows the paradigm of the interpretivism (Saunders et al., 2019). In this regard, the aim of this empirical study is to explore the various perspectives of the participants on the research topic and questions, rather than test a pre-defined hypothesis.

3.1.2 The exploratory nature of the study

The purpose of the research and the questions that are expected to be answered differentiates nature of the study. An exploratory research takes place when there is no significant prior knowledge of the problem and the purpose is to discover new research directions, hypothesis

or ideas towards answering the question “what” and "how” and it’s usually followed by sequential studies on that topic (Collis, 2014; Neuman, 2011) . When a new research problem or phenomenon is identified, apart from the “what” and “how” questions, two more questions are involved: “Who”, “When” and “Where” ? This is the stage when descriptive research takes place in order to answer specific questions and describe the context and the relationships in a phenomenon by using various instruments like surveys, field data collection or content analysis (Little, 2013; Neuman, 2011). In Analytical research, the purpose is to identify the reasons behind a pattern, “Why” it happens, while in Predictive research the target is to construct a valid explanation of a condition in order to forecast a future occurrence(Collis, 2014).

3.1.3 The theoretical nature of the study

Research methodology is also classified by the way it is conducted through the linkage with the theoretical framework and literature: is it a top-down or bottom-up design? Generally, there are two approaches: inductive and deductive. In business research, deductive is the study that goes from the general to the specific, by constructing a baseline from previously established theories and then testing the hypothesis on a population in order to confirm the validity, while in inductive research, the analysis of empirical observations leads in the construction of a theoretical framework by generalizing the findings in more abstract knowledge (Collis, 2014; Neuman, 2011).

This categorization in quantitative and qualitative content analysis takes a more specific form: from theory to text (deductive) or from text to findings (inductive); a decision that lies upon the researcher who considers the nature of the data, the research questions and the level of information implicitness in the analysis of the content (Gavora, 2015). Although

traditionally a popular view in the scientific community has been that deductive research is more valid, the recent trend in content analysis has placed inductive approach in a very important place in scientific research, as the analysis of massive amounts of digital data can lead to discovery of new knowledge and phenomena from empirical case studies that can contribute to a useful generalization (Little, 2013).

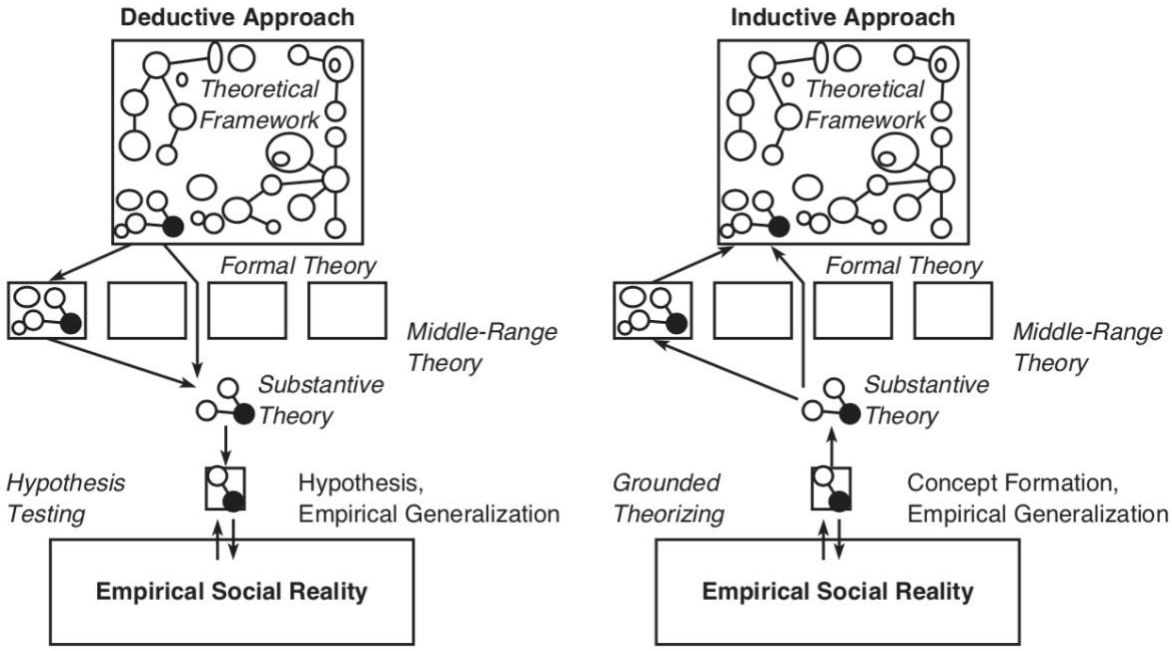


Figure 8 Direction of Theorizing

3.1.4 The academic nature of the study

Last, following the definition of research in terms of outcome, this study is expected to produce basic academic scientific results, as the main focus is to provide new knowledge of understanding Crowdsourcing and Equity Crowdfunding and contribute to a new perspective, in contradiction to applied research which has generally more practical implications and is

motivated by the initiative to solve a specific problem (Collis, 2014). Although basic research doesn't solve a problem immediately, there are several cases that it may contribute to a solution in the long run and the dynamic of expanding knowledge is considered unquestionable (Neuman, 2011).

ASPECT	BASIC	APPLIED
Primary audiences	Scientific community (other researchers)	Practitioners, participants, or supervisors (nonresearchers)
Evaluators	Research peers	Practitioners, supervisors
Autonomy of researcher	High	Low-moderate
Research rigor	Very high	Varies, moderate
Highest priority	Verified truth	Relevance
Purpose	Create new knowledge	Resolve a practical problem
Success indicated by	Publication and impact on knowledge/ scientists	Direct application to address a specific concern/problem

Figure 9 Characteristics of Basic and Applied Research by Neuman (2014)

3.2 Text mining

The method that was used in the literature review was based on text mining.

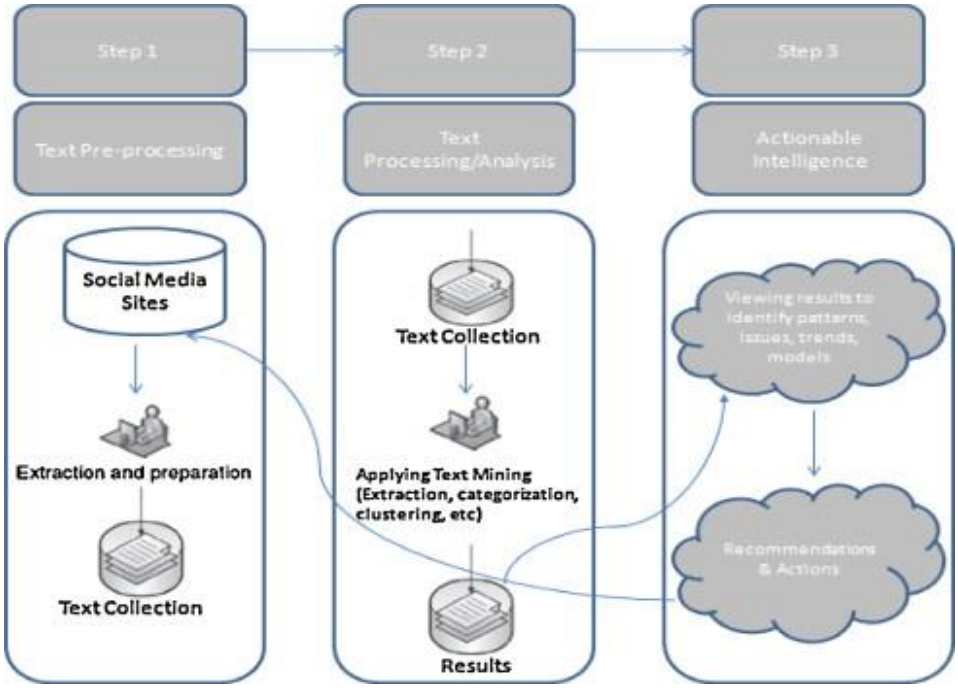


Figure 10 Text mining for social media (He et al., 2013)

Text mining is a very common technique for research in social media (Stieglitz, Dang-Xuan, Bruns, & Neuberger, 2014), as text seems to be one of the dominant means of online communication nowadays. Text mining is a field of data mining focusing on textual data and refers to the knowledge discovery from textual data bases in order to extract non-trivial patterns from unstructured text (Fayyad & Uthurusamy, 1996). Text mining includes also techniques from information retrieval, text analysis, information extraction, clustering, categorization, visualization, database technology, machine learning, and data mining (Tan & Yu, 2003).

The framework adopted in this study is depicted in Figure 10 proposed by (He et al., 2013) and describes the process of text mining from the very first step to the last one. Specifically, this process includes:

1. Collecting unstructured data (e.g. research articles)
2. Store the documents in a database for further analysis

3. Extracting and preparing the data for analysis
4. Store the documents in a database for further analysis
5. Apply Data Analysis Techniques
6. Results evaluation and verification
7. Interpretation of the results
8. Recommendations and actions

In order to perform the Literature Review in Chapter 2, a search was conducted to identify the relevant research articles, as described in 2.2. Now that the first milestone is completed, the data are stored for preprocessing and analysing. After retrieving the research articles, several preprocessing steps are conducted to these web documents, such as stemming and stop words removal, in order to reduce the noisy information and to improve text processing accuracy (Chakrabarti, Roy, & Soundalgekar, 2003). Stop words are words that rarely contribute useful information in terms of document relevance. The last preprocessing element is words stemming. This step helps to remove the syntactical elements of a word and break it down to its "stem" i.e. root. (Salton, 1989). This cleans the document from redundant elements and contributes to computational efficiency (Zhan, Loh, & Liu, 2009).

After the research articles were pre-processed, a software for Quantitative Analysis was used (WordStat). Cluster analysis was performed and the results and the interpretation of results are described in Chapter 2.

3.3 Interviewee selection

The empirical part of this study was based on interviews of investors who invest through Equity Crowdfunding. In order to proceed to interviewees selection, it was important to decide a) the number of the interviewees and b) the appropriateness of their profile.

The number of the interviewees was based on references of past academic literature on qualitative research (Silverman, 1997; Jennings, 2001, Maxwell, 2012; Starman, 2013). Furthermore, current literature focused on qualitative research in the domain of Business and Management and Crowdfunding has also been considered. After these considerations, the number of the interviewees was formed to 22. To further validate that this number is sufficient, the collected data had to be reviewed to make sure that they reach a saturation point in which no new information is collected any more from subsequent interviews (Maxwell, 2012).

Regarding the appropriateness of the interviewees profile, the selection was based on certain criteria that are presented below. The first criterion was about ensuring that the interviewee has sufficient knowledge on the topic of investing through Equity Crowdfunding. For this reason, investors had to have invested in at least 10 companies through Equity Crowdfunding.

The second criterion was to ensure that the sample includes heterogenous types of investors, similar to a sample of an Equity Crowdfunding Campaign. Traditionally the literature regarding financing early-stage ventures has focused on venture capitalists and angel investors (Drover et al., 2017; Wallmeroth et al., 2017). Equity Crowdfunding, by introducing the concept of the crowd as a capital provider, broadened the scale of participation both in the variety of the types of investors and in the number of investors that participate in funding one venture. In ECF, the opportunity to back an entrepreneurial venture

is given not only to professional investors, but to amateur investors as well. And, while in traditional private equity financing the number of investors that participate in the financing of a venture is limited to a one or two digits number, in ECF this number can reach several hundreds or thousands (Vismara, 2018).

Current literature has attempted to explore the effects related to scaling up the investor pool and to unfold some aspects of the crowd decision-making and behavior during the investment process in ECF. So far though, the scope of exploration is formed without taking into account different types of the crowd investors. In most cases, crowd is seen as an aggregate body of investors. And in the few cases of differentiation, the types identified are limited to professional and retail investors in relation to the funded amount and without really distinguishing any decision-making drivers.

This study attempts to move a few steps further and select three types of investors i.e. Professional/Retail, High-Tech/Low-Tech and Regular/Impact. The selection of the first type i.e. of the Professional/Retail investors, follows the current literature and is based on the nature of ECF itself, as explained above. The aim was to understand better the role of knowledge sophistication and information asymmetries that is associated with this type of investors. The selection of the second type, High-Tech/Low-Tech, is based on an attempt to cluster the type of the investments based on innovation intensity and growth potential. High-Tech companies are characterized by allocating high efforts on innovation. There are various definitions in literature, such as pursuing a market offering that is highly dependent on innovation (Medcof, 1999), allocating an R&D expenditure 5% or higher of sales (Balkin, Markman, & Gomez-Mejia, 2000), dedicating high investment of resources in innovation activities (Wang et al., 2010) and having a high potential in developing and producing innovations (Yu et al, 2021). Moreover, High-Tech companies tend to be high-growth but also face higher uncertainties, as they are generally “characterized by strategic, technological

and operational uncertainty which affects growth rates, competitive positions and industry boundaries" (Bahrami & Evans, 1987: 52). On the other hand, Low-Tech firms, such as traditional real estate, traditional e-commerce and lifestyle businesses, are not considered in general of high-innovativeness, can be of lower growth and more labour and capital intensive (Hertog et al., 2011). This can affect the financial and non-financial investment evaluation, especially in regards to the risk and growth expectations of investors. The third type of Regular/Impact investors is selected because of the global current trend for sustainability and impact investing. The human interest for sustainability and impact is growing. At the same time, more and more policy institutions are promoting goals and standards for a sustainable and inclusive world, with the UN Sustainable Development Goals (SDGs)[5] as an example. This influences the investment industry as well. Financial and regulation bodies, such as Hong Kong Exchange (HKEX)[6] and New York Stock Exchange (NYSE)[7] are adopting sustainability standards to enforce information disclosure and classification of companies based on their sustainability ranking. Investment institutions and investors are pushing in this direction as well. Early-stage ventures are called to become more sustainable to secure future financing and succeed in an IPO. Furthermore, a controversy exists in literature whether impact ventures can be more easily funded through ECF. Thus, exploring the decision-making of impact investors is of critical importance.

Another criterion was geographical, in order to explore whether the cultural background or the location they invest in has any potential influence on the views of investors. Thus, interviewees from different continents and countries were recruited: Asia, Europe, North America and South America.

[5] https://sdgs.un.org/goals

[6] https://www.hkex.com.hk/News/News-Release/2020/201201news?sc_lang=en

[7] https://www.nyse.com/sustainability/SSE

Potential interviewees were recruited through online social media, personal network and through attendance in entrepreneurship and fundraising events. They were contacted either via e-mail or through social networks, such as LinkedIn and Facebook. The contact included presentation of the research context and aim and the relevant documents per the interview questions, the background information collection (Appendix A) and the privacy protection of their participation (Appendix B). The contact process and the reminders were repeated numerous times until the interviewer had reached the sufficient number of interviewees.

Interviewees were sent in advance an e-mail with the interview questions, presented below, the background information questions (Appendix A) and a consent form (Appendix B) that explained their rights, the privacy protection of the collected data and how the data are going to be used. This way the interviewee was offered the opportunity to understand better the context of the interview, proceed to a reflection on the questions, if willing so, and feel comfortable about the privacy of their participation.

The duration of the interviews was between 30-60 minutes and resulted in more than 1000 pages of transcripts. The interviews were structured as follows. The interviewer introduced herself and the context of the research. Then explained the measures taken for the privacy of the collected data, the interviewees rights to skip a question for information they prefer not to disclose and explained how the data will be used (Appendix B). The interviewer also asked the permission of the interviewee to start the recording of the interview. The next step was to introduce to the interviewee about the structure of the interview that consists of two parts. The first section was related to the research questions, that are presented below, and the second to the collection of demographic data (Appendix A). The language of the interview was in English. The interview was recorded and transcribed.

The first section was designed to elicit information regarding their views on innovation and the investment process in Equity Crowdfunding. The first step was to conduct a pilot

interview with an expert, who is defined as an experienced investor of Equity Crowdfunding. The purpose was to ensure that the questions are clear, appropriate and the flow of the interview smooth and leads to a coherent and non-repetitive feedback. Further to the pilot interview, the researcher combined also information from other sources, such as websites, magazines and social media that are dedicated on Equity Crowdfunding.

The final interview questions are as follows. The first part aimed to gain understanding about the views of the investors on innovation:

1. How would you define innovation in general?

2. Do you distinguish different types of innovation (e.g. radical, incremental)?

The second part was about the investment process in Equity Crowdfunding and had three sub-sections: the investment decision, investment monitoring and investment evaluation.

The first sub-section included questions referring to the investment decision:

3. Is innovation important for your investment decision in Equity Crowdfunding ?

4. What are your expectations/ motivations to invest in an innovation in general? Is there something particular about your motivation to invest in Equity Crowdfunding ?

5. On which criteria do you base the decision to invest in an innovation in Equity Crowdfunding ?

6. How do you assess the innovation capability of a firm in Equity Crowdfunding ?

7. What risks do you perceive for your Equity Crowdfunding investment? Do you perform any actions to mitigate them?

The second sub-section included questions related to the investment monitoring:

8. Do you take an active role in the innovation process in Equity Crowdfunding? On which criteria do you base this decision? Pls mention any enablers and barriers for your participation.

9. (If you replied yes to the previous question) How do you participate in the firm's innovation process?

10. How do you assess the innovation performance throughout the investment process?

11. What controls/risk mitigation do you apply in a firm's innovation-related actions in Equity Crowdfunding ?

The third and final sub-section comprised of questions related to the innovation evaluation and exit:

12. How do you define a successful innovation outcome?

13. What are the financial indicators to measure an innovation?

14. What are the non-financial indicators to measure an innovation?

15. Where do you base your decision to maintain/expand your investment or exit?

3.4 Analysis of empirical data

The approach used for the analysis of the collected data was based on thematic analysis for making sense of the interview data. Thematic analysis is a qualitative data analysis method suited for identifying and organizing patterns of meanings across data and providing relevant themes to make sense of collective experience (Braun, Clarke, 2006; Braun, Clarke, 2012). The purpose was to find the commonalities that aid with answering the research questions

and focused both on obvious meanings and latent meanings and assumptions underlying them. Specifically, the aim was to understand investors views in regards to innovation and the investment process in Equity Crowdfunding.

Following Braun and Clarke, the analysis revolved around these steps: (1) familiarizing ourselves with the leeway and character of investors' responses to the questions on the investment process in Equity Crowdfunding; (2) generating initial codes by labelling with keywords the features of interviews that were assessed to be relevant to the research question; (3) searching for themes and subthemes by clustering codes that share some feature which reflects a meaningful pattern. The software used for thematic analysis was Delve Tool [8].

3.5 Description of the interviewees

Table 4 Descriptive list of interviewees

Interviewee	Position	Industry	Professional Background	Type of Investor	Investment Orientation	Interview Duration (mins)
I01	General Manager & Venture Partner	FinTech, IT Services & Electronics	-Investor -Serial entrepreneur -Start-up Mentor -Consultant -Academic	-Angel	High-Tech Regular	214

[8] https://delvetool.com

I02	Corporate Director	Investments	-Investor -Serial entrepreneur -Consultant -Academic	-Professional -Corporate	High-Tech/Low-Tech Regular	116
I03	University Professor	Academia	-Investor -Entrepreneur -Start-up mentor	Retail	High-Tech Regular Impact	64
I04	General Manager	eCommerce	-Investor -Entrepreneur	-Angel -Retail	Low-Tech Regular	62
I05	Group CIO	Banking	-Investor -Corporate entrepreneur -Start-up mentor	-Angel -Professional -Corporate -Retail	High-Tech/Low Tech Regular	58
I06	CEO	Educational Technology	-Investor -Serial entrepreneur	-Angel -Corporate	High-Tech Regular Impact	52
I07	VP of Payments	Prop Tech	-Investor -Start-up mentor	-Retail	High-Tech/Low-Tech Regular/ Impact	87
I08	Co-Founder & Chief Digital Officer	Advertising & Marketing	-Investor -Entrepreneur	-Professional -Retail	High-Tech Regular/ Impact	79
I09	Financial Manager	Insurance & Wealth Management	-Investor -Start-up mentor	-Retail	High-Tech Regular	43
I10	Co-Founder & Senior Portfolio Manager	Equity Crowdfunding Platform	-Investor -Entrepreneur -Start-up mentor	-Professional -Institutional -Angel	High-Tech/Low Tech Regular	55
I11	Co-Founder & Product Manager	Equity Crowdfunding Platform	-Investor -Serial entrepreneur -Start-up mentor	-Angel -Retail	High-Tech/Low-Tech Regular	42
I12	Founder & CEO	Equity Crowdfunding Platform for ESG Investments	-Investor -Serial entrepreneur -Start-up mentor	-Angel -Retail -Institutional	High-Tech/ Low-Tech Impact	62
I13	Account Representative	Start-up Incubator & Equity Crowdfunding Platform	-Account Representative -Investor -Start-up mentor	Retail	High-Tech Regular	54
I14	Wealth Manager	Wealth Management	-Investor -Wealth Manager	Professional	High-Tech/Low-Tech Regular	69
I15	Co-Founder & Managing Director	FinTech	-Investor -Entrepreneur	Retail	High-Tech Regular	55
I16	Civil Engineer		-Investor -Civil Engineer	Retail	High-Tech/Low Tech	82

		Construction & Engineering			Regular/ Impact	
I17	Co-Founder	Accelerator & Incubator	-Investor -Serial entrepreneur -Start-up mentor -Member of the FinTech advisory board of a major Securities Commission	-Angel -Professional -Retail	High-Tech Regular	56
I18	Executive Director	Equity Crowdfunding Platform	-Investor -Serial entrepreneur -Start-up mentor	-Angel	High-Tech/Low-Tech Regular/ Impact	85
I19	Managing Director & Co-Head of Asia Pacific	Outsourced Investment Office	-Investor -Serial entrepreneur	-Angel -Institutional	High-Tech Regular	34
I20	CTO	Green Logistics	-Investor -Serial entrepreneur	-Angel	High-Tech/Low-Tech Regular/ Impact	67
I21	Co-Founder	Accelerator & Incubator	-Investor -Start-up mentor	-Angel -Professional	High-Tech Regular	48
I22	Founder & Executive Chairman	FinTech	-Investor -Entrepreneur -Ex Investment Banker	-Professional	High-Tech Regular	33

The final sample of the empirical research incudes 22 investors from the three categories: Professional/Retail, High-Tech/Low-Tech and Regular/Impact. The description of the interviewees is shown in Table 4. The interviews were conducted from January 2021 to August 2021 and lasted from 33 to 214 minutes.

Background information regarding the interviewed investors was collected, related to their demographic and investment profile. This information is visualized in figures that are presented in Appendix C. A descriptive summary of this background information is presented as follows.

The ECF investors' ages ranged from 21 to 59, with a majority in the age range of 30-39. Finding female ECF investors proved to be very challenging and perhaps female investors were less inclined to be interviewed, although across the industry, there's significantly more male investors. Caucasians made up a majority of ECF investors', then Asian, and Latino or Hispanic. Half respondents were married, 32% were never married and 14% divorced. All respondents were engaged in full time employment of 40 hours per week or more per week. Most of the respondents had both entrepreneurial and managerial experience, with only one with only entrepreneurial experience and three with only managerial experience. The respondents covered several major continents, the Americas, Asia and Europe, including the following countries USA, Canada, Mexico and Chile, to China, India, UK, Germany and Indonesia. A majority of ECF investors interviewed are highly educated. 73% of respondents had master degrees or above, while 23% had bachelor degrees. Only 4% had a college degree. Most respondents have finance (banking, economics or accounting) and business management backgrounds, then computer science (and technology), law and engineering. Respondent household income ranged from $50,000 to more than $400,000. Half respondents had household incomes between $100,000 and $300,000. The respondents have a wide network of sources for hearing about opportunities, although, many if not most opportunities find their way to each professional investor directly or indirectly by invitation and professional environment (entrepreneurial community and circles). Average retail investment was USD$200, but ranged from as low as USD$10 to a maximum of USD$500. Average professional investment was USD$100,000, but ranged from USD$50,000 to USD$250,000. 60% of retail investors only invested domestically, 20% only overseas and 20% only across continents, compared with 41% of professional investors only investing domestically, 18% only overseas and 41% only across continents. Numerically, the majority of retail investments (60%) were domestic, compared with retail (53%) being local city.

4 Findings: the investors' perceptions throughout the investment process in Equity Crowdfunding

This chapter portrays the findings that were obtained from the data collection process that is described in Chapter 3. Findings are a result of a qualitative analysis on the responses of the interviewed investors. The investment process in Equity Crowdfunding is approached in three stages that are reflected in each section of this chapter: the decision to invest in an innovation (4.1); the investment monitoring and participation (4.2); and the evaluation of the innovation and exit (4.3).

4.1 The first stage of the investment process: the decision to invest in an innovation

This section presents the investors' perception in the first stage of the investment process in ECF. The results reveal that investors' decision to invest through ECF is formed by various types of motivations (4.1.1) and two categories of criteria: the innovation (4.1.2) and the team (4.1.3).

4.1.1 Motivations

The interviewed investors were asked to share their motivations to invest in an innovation. The results of this study show that the role of the Return On Investment is the strongest motivation to invest in ECF. At the same time, it is found that the notion of financial motivation is bound to the type of investor. Further to the financial motivation, additional motivations are identified and presented in this section.

Return On Investment

Among all the types of crowdfunding i.e. Donation-based, Reward-based, Debt-based and Equity-Based Crowdfunding, only the two latter offer financial rewards. In Donation-based, funding is an act of charity, while in reward-based crowdfunding, it is more a consumption decision (Wasiuzzaman et al., 2021). Debt-based crowdfunding, which is based on loans, promises a financial reward in the form of a pre-agreed interest on the given loan, the level of which is usually modest and follows the market (Pierrakis, 2019). But in the case of Equity Crowdfunding, the financial reward, not only is not guaranteed, but is neither pre-defined. It may vary from a complete loss, in case of a company's bankruptcy, to very high returns. Therefore, the decision to fund an innovation through Equity Crowdfunding, has a strong investment character (Wasiuzzaman et al., 2021). The crowd buys a portion of equity in the company expecting a Return On Investment (ROI), the level of which will depend on the company's future progress. This ROI can have various forms. One form can be the dividend, which is determined by the founders' decision and usually follows the company's proportionate growth. Another form, which is the most desirable but often comes at a later stage, is a higher valuation of the company's equity, which can occur in a future financial event, such as a consequent fundraising round, or through a Merger and Acquisition (M&A) or listing in the stock market via an Initial Public Offering (IPO) (Signori & Vismara, 2018; Wallmeroth, 2017; Wasiuzzaman et al., 2021).

Equity Crowdfunding is considered part of the domain of investments that have a high risk/reward ratio (Estrin et al., 2018; Wald et al., 2019; Wang et al., 2019). Given that the companies that seek financing through Equity Crowdfunding are primarily young, the information asymmetry challenges are innate to their age and growth stage (Ralcheva & Roosenboom, 2019; Walthoff-Borm et al., 2018). In many cases, they haven't even

completed their innovation or started to produce their own revenues and there is a lot of uncertainty around whether they will survive. Hence, investing so early in a venture might lead to losing all the invested amount or be forced to sell the equities at a discounted price. However, if the company survives and grows, the investor will see the value of their equities being multiplied. Therefore, the crowd that invests in a company, tries to balance between the high risks of losing part or all the amount of the investment with the hope in the future to be highly rewarded for taking this high risk earlier.

In this context, it is expected that one of the primary motivations of the crowd to invest in an innovative venture through Equity Crowdfunding is to receive financial returns on their investment. Indeed, this study confirms this expectation, as financial returns are found to be inherent in investors' decision to invest through Equity Crowdfunding. Specifically, financial returns are the most cited reason to invest, as it has been supported by all the participants [I1-I22]. On this note, I02 states:

> *"The first is trying to make like an investment to an innovation that's leading to good return."*

In the findings, financial return is found to be associated with some specific investment expectations: the level and the time horizon of the return, the risk of the return and the return as an integral part of a diversified portfolio. At the same time, risk is found to be bound to the characteristics of the crowd investors, whether they are investing in High-Tech or Low-Tech and in Regular or Impact innovations.

Level and time horizon of the return

Regarding the level of the return, approximately half of the investors in this study i.e. I02, I07, I08, I10, I11, I12, I13, I14, I16, I20, I21, had a very clear objective.
Investors' expectation varied from 30%-50% within the first year to 10X-100X within the first five to ten years, depending on the company's stage. Most of these investors perceived that the desirable form of return is a higher valuation of their equity. Only a few of them i.e. I02, I12, I15, I20, mentioned dividends as a form of return.

Level and time horizon of the return: High-Tech vs Low Tech investors

From the above investors, the crowd investors that invest in high technology innovations appear to have an appetite for a stronger return and patience to wait over a longer time horizon: 5-10 years i.e. I02, I07, I08, I10, I11, I12, I13, I14, I16, I20, I21. Some of them were more modest in their expectation, for instance, I13, as an investor himself and working in a start-up incubator with their own Equity Crowdfunding Platform, commented:

> *"As I mentioned previously, we expect exponential growth, right. That's why we go, we invest in equity in these venture type of businesses. Equity Crowdfunding is for those exponential returns. So minimum 10X. That's typically what we look for. Our investors in our network look for that as well. A minimum 10X return on funds that are requested. So that's our financial motivation."*

While others expressed high expectation on the multiplication of their return. On this note, I14 states:

"I think it's to do with wanting to be involved in something that's new, young, small, and has the potential to completely blow up in terms of returns, I'm trying to find the next brew dog, if you like, that can return sort of like 50-70 times on multiples. That's kind of what I'm looking for."

On the contrast, crowd investors that invest in low technology innovations, such as real estate, alternative residential construction, co-housing, urban redevelopment, or trendy lifestyle businesses, are found to expect lower and quicker returns. The investor I02, that invests a lot in these industries, mentions:

"Having a quick return, right, this is a success, yes, we definitely say for example in nine months or one year we can get a 50% return and then this means that we can either get the dividends from the company okay or we get some product and then we get some profit sharing."

This differentiated expectation for the level of return appears as well at the level of an individual investor's decision-making. A few investors i.e. I02, I20, that invest both in low and high technology, stressed that they diversify their portfolio, with part of their investments' capital being channeled towards Low-Tech innovations, that can offer quick and lower returns, while another part being allocated to longer-term, higher-return High-Tech innovations. For instance, I02 comments:

"I have two money pools, one is my family's trust okay and another is my personal savings, for my family trust I will only go for a low tech quick return, just like properties or you want to invest in something like what I did before in Beijing (innovative catering services for professionals/workers), because it's a low- tech quick return, but for projects like in Tenerife or like with my buddies in telecommunication, the radio (developing a High-Tech antenna solution), I will be using my personal money, okay "

As mentioned above, the perceived primary form of return among most interviewed investors i.e. I02, I07, I08, I10, I11, I12, I13, I14, I16, I20, I21, is a future higher valuation of their equity. Only four investors i.e. I02, I12, I15, I20, mention dividends as a form of return. The three of them expect a dividend mainly when they invest in Low-Tech innovations. This stream of thought is illustrated representatively by I20's statement:

"So, if I'm looking at an early stage, I would at least expect 10X to 20 X, maybe more, if I am entering at a very early stage where I'm building the product at the time of the investment. But if it's a lifestyle business, I'm okay with the return of 10-15% or 20% dividend per year or whatever the case may be. Okay again, depends on what stage I'm entering, what kind of business I'm entering, somewhere it will be lucrative, one where you are getting much more high returns. And obviously when there is an exit, you get obviously the whole yes, exactly. And then you don't know what exit you get, 20X, 25X, 30X, whatever the case may be."

Among the investors who invest in High-Tech innovations, only one, I15 referred to dividends. Interestingly, I15 believes that in High-Tech longer-term investments dividend is

more a psychological rather than a financial reward for the investors, as it can act as a signal that the company is progressing.

> *"I don't think any of these companies actually highlight that they do dividends, at least the ones I've seen so far. It's usually just like, oh I'm a startup, invest in me, but maybe if they would give a dividend, then I would definitely invest because then, at least I know, I can predict future earnings, but the question in such a case is how much will be the dividend within the first two or five years? But still, it's better than, I guess, nothing. It's psychological. It means that your investment is not wasted."*

Level and time horizon of the return: Regular vs Impact investors

The findings of this study suggest that the investors who are inclined towards impact investing or are exclusively dedicated to that, such as I03, I06, I07, I08, I12, I16, I18, I20, differentiate from regular investors regarding their expectation for financial return. In summary, they all stated that they are willing to counterbalance between financial and non-financial rewards, such as environmental, societal or ethical. Among the impact investors it is observed that there are two streams of thought that in this study are called *impact-conscious investors* and *impact-motivated investors*. The investors that in this study are called *impact-conscious* are investors that systematically pursue impact investing either exclusively or by consciously allocating a fraction of their investment capital for impact innovations, such as I06, I08, I12 and I20. For instance, I06 supports:

> *"I distribute part of my funding based on human reasons and part of my funding based on business reasons."*

In relation to financial return, impact-conscious investors are found to compromise more on their expectation for a financial return and in certain occasions they invest small amounts even as a form of donation. This stream of thought is expressed representatively by I08, who pursues both regular and impact investments and believes that private entrepreneurial initiatives that develop innovations with environmental impact should be supported as they have the potential to complement the limitations of public governance:

> "*I don't put a lot of money into those just because I know I'm not expecting to make a return on those. I'm just helping those people get their companies off the ground because I want those innovations to take off. What I see is poor infrastructure, and at least our government here in the US is not doing adequate job in terms of actually creating the proper path forward that is necessary to fight off things like climate change and some of the major long-term problems that we're facing as a world collectively."*

The investors that in this study are called *impact-motivated* are investors that do not engage systematically in impact investing; they consider themselves more financially conscious, but they occasionally take into consideration the impact of an innovation or social responsibility as a dimension in their evaluation, such as I03, I07, I16 and I18. Although they get fascinated by the idea of a socially responsible innovation or an innovation that can change the world, they have a clear focus on the growth potential of the company they are investing in.

Level and time horizon of the return: Professional vs Retail Investors

In ECF, the crowd consists of different types of investors. One categorization, that is based on the value of investment assets and experience, is between professional and retail investors. The findings of this study do not reveal a differentiation in expectations for financial return among these two types of investors. The range of return given by professional investors aligns with the range given by retail investors. Moreover, the perception of the time horizon of the investment aligns as well.

Perception of risk/reward relationship

Risk in ECF is caused by high information asymmetry that exists when investing in an early-stage innovation. Thus, it is challenging to predict if the venture will grow successfully. At the same time, the possibility of a potential loss of the invested capital due to the venture's bankruptcy is high.

The interview findings indicate that the way investors perceive the risk/reward relationship is as an integral element of their portfolio in ECF. Most of the interviewees i.e. I01, I02, I03, I05, I06, I07, I08, I10, I11, I13, I14, I16, I21 expect that only a fraction of the companies they invest in will eventually grow and offer them high returns, while they expect the rest to fail. Their investment rationale is that the successful companies will provide significantly high returns to compensate for the losses they will experience from the rest and overall offer them profit on their portfolio capital. Some investors expressed explicitly the belief that only 2 or 3 of the 10 ventures they invest in will eventually survive over time and give them strong returns. This revelation is described representatively by I10, from his experience as a Professional and Angel investor and founder of an Equity Crowdfunding Platform:

> *"It is part of everything that's organic and has so many moving parts. So, I would say, even applying the investment approach and methodology I described earlier, I don't have*

a 10 out of 10 hit rate. What about those (the retail investors)? They're just looking at one page or 60 second video, a nice deck, and then, okay, I'll just write it. All right? All right, 10 of these, and I hope to whatever payoff. Maybe the hit rate will be 2 over 10. My hit rate might be 2 out of 10, and not too often 3 out of 10."

Perception of risk/reward relationship: Low-Tech vs High-Tech investors

All the investors in this study [I1-I22] in general seem to be aware of the risks involved in investing in early-stage innovations over Equity Crowdfunding. The only investor that hasn't referred to the risk/reward aspect is I04, who invests exclusively in Low-Tech, real estate and e-commerce businesses, implying that the risk concern around this type of investments might not be so strong.

Perception of risk/reward relationship: Regular vs Impact investors

The results haven't shown significant differences between the regular and the impact investors. It is worth noting though, as described earlier, that among the impact investors, almost all the impact-motivated investors i.e. I03, I07, I16, have commented on the diversification of their portfolio to mitigate the risk revolving around impact investments, while most of the impact-conscious investors, except for I08, do not seem to develop such a practice.

Perception of risk/reward relationship: Professional vs Retail investors

Another theme that has been revealed is that the big risks and big rewards are two sides of the same coin. This high risk/reward ratio is an important reason for many retail investors i.e. I03, I08, I13, I14, I16 to invest through Equity Crowdfunding. They state that they are looking for the next unicorn i.e. a company, like Tesla, that they can afford to invest in with a

low ticket at an earlier stage and at a lower valuation and consequently will have exceptional growth, hence provide them with sky-high returns. On this note, I14 explains:

> *"I'm looking for a company that I believe will totally outperform anything within public markets. I'm looking to get into a firm that's younger, will have a perceived high risk, but for a perceived high return, much higher return. And I'm looking to sort of achieve multiples of anywhere between, I don't know, say like 10 and 30. Yeah, that's kind of the multiple I'm looking for. I know a lot of people, a lot of people I speak to about equity crowd funding. They look for the tax benefits or they look for the actual investment perks. So, discounts within the companies or free gifts, that kind of thing. But I'm not really driven by those. I don't really need it at present. But for me, it's kind of to look for our performance in investment returns. I'm trying to find the next brew dog, if you like, that can return sort of like 50-70-100 times on multiples. That's kind of what I'm looking for."*

The professional investors overall appeared more modest regarding such expectations apart from one exception, I08. The specific investor is located in one of the global cradles of innovation, California, and has already experienced first-hand the fruits of investing in a unicorn in the early days as an investor, much before the emergence of ECF:

> *"I mean, you shouldn't be going into this thinking like you're going to pick all winners. You're doing your best to weed out the junk. And even after you weed it out, the junk don't expect a lot of winners in there. So, you need that 10X to probably break even at the end of the day. And then if you get one or two, that are going to be those 20X, 200X, you find the next Tesla, and you invested in them at a million dollar valuation. I think, literally, that was one of the companies I invested in after getting out of that stock market game in the 7th grade. And it's crazy. I invested in them at, like, $0.60 a share by today's standards and input, what, $130 a share today. And that was literally what put me through college and gave me money to start my own startup. I didn't have to raise funds for my own*

startup, literally, just because of being able to pick an innovator at that early stage and having that kind of success."

This implies that the unicorn phenomena are rare and due to the law of probability are most likely to appear in locations with intensive innovative activity, such as California/Silicon Valley.

Perception of risk/reward relationship: East vs West

Overall, investors from East and South East Asia appeared to have a more conservative attitude towards risk. Among all the East Asian investors, this has been particularly observed in investors that had a local education and upbringing and a lifelong locally focused professional activity i.e. I02, I09, I10. The attitude towards risk is expressed as a concern to invest in pre-revenue companies. Conclusively, in order to mitigate their investment risk, they tend to invest in companies that are in a later stage and preferably have already traction. On this note, I10 states:

"I need to see your execution plan. I typically will not go into early. I come in after MVP, I come in actually just before revenues but usually post-revenue. So I've come to the point when I look at a private investment, I don't go in unless I know the exit is done. It's wrapped. I know who's the buyer. I know what's the price. I know when you're doing this. It comes to that point, then it comes on the strength of the sponsor, or the lead investor, or the introducer and the ecosystem that introducer comes from. Right? So, and that's also part of the reason why people invest in [name of the platform] deals because they, they know who we are as a platform, who the owners are and how they are linked politically. And that they would have the influence and the will to get this company to the next milestone. And that's where you get your valuation accretion. And increase the chances of

a successful exit. So even before you write the first check, you must see everything, including the exit."

The impact of an innovation

One popular motivation for the investors to participate in ECF is to help materialize an innovation that can have a positive impact on the world. The way investors define impact through their examples is very close to the areas defined by the Sustainability Accounting Standards Board (SASB). SASB is one of the most credible and acknowledged organizations globally that has developed sustainability accounting standards adopted widely by investors, lenders, insurance underwriters, and other investment professionals. Although the standards are industry-specific, they all fall under areas of focus, which are Environment, Business Model and Innovation, Human Capital, Social Capital and Leadership and Governance (Madison & Schiehll, 2021; *SASB*, 2022). Overall, all the impact investors in this study i.e. I03, I06, I07, I08, I12, I16, I18, I20, appeared motivated to support innovations that create impact. Overall, the notion of impact investing is described as supporting a company, a technology or a service that creates developments in any of the sustainability areas, such as energy efficiency, clean tech and social inclusion. This emerges as a consensus between both the impact-conscious and impact-motivated investors.

However, the way impact is defined by impact-conscious investors is more straightforward compared to the impact-motivated investors. Impact-motivated investors appear as visionaries who perceive impact in a more abstract way; any way that can promote the transformation of the society towards something better. They consider, for example, as impact investing, supporting a technology of the future or promoting the creation of job positions in the local economy. On the other hand, impact-conscious investors perceive

impact in a more mindful way and appear more well-informed around sustainability objectives. For example, I12 who is an impact-conscious investor and founder of an ESG Equity Crowdfunding Platform, states:

> *"I look at the idea and I see how innovative I think it is and how it's disruptive or tries to change the paradigm a bit. And I like to support communities that probably haven't typically been supported. So I think of my 20 investments, probably at least more than half are people of colour that are starting something kind of cool. I think I'm invested in a couple of food companies that are like vegan-centric because I think that's the way things are going. I have a 27 year old and a 23 year old. So I try to listen to what they're talking about and pay attention. So I'm trying to look for trends that are in the future."*

Among the most emergent themes on impact have been environment protection and the social inclusion. Such an example is described by I20, who is CTO in a Green Logistics company and an Angel Investor that engages with impact innovations:

> *"The one we did in Hong Kong, it was impacting both sites. One it was a service-on-demand app. It was helping the non-recognized society of helpers, handyman and all, to be brought to the light, build a brand name and run themselves and available as per their schedule and get more jobs. While it was making the users life easier, they can find anyone at any given point of time. So basically, again most of my investment is where it is a large set of users are being impacted or touched upon."*

Findings reveal as well a relationship between the cultural background and the attitude of the investors towards the impact orientation of an innovation. Interestingly, no investors from East and South Asia expressed interest in the impact of an innovation.

<u>Democratization of capital and innovation</u>

The democratization of capital and innovation was considered as an important motivation by some investors i.e. I06, I08, I18, I20. Interestingly, this is not found to be associated with whether they are Professional or Retail, as they belong to both categories. All of them though are impact investors. This indicates that their attitude for impact is not only limited to investing in innovation but expands as well to the choice of investment mechanisms. This finding implies that ECF, due to its "democratising" nature, is likely to attract many impact investors who believe in the ideology of crowdfunding. It can also imply that impact-oriented innovations can more easily find their matching investors in an ECF platform.

When investors in this study refer to the democratisation of capital and innovation, they point out three aspects: the risk assessment, the collaborative nature of value-creation, the mitigation of selection biases and as a result the increased accessibility for funding.

The risk assessment has been initially the primary reason ECF was characterised as a promising platform for the democratization of capital and innovation when it first emerged (Buerger et al., 2018; Gleasure & Feller, 2016). ECF was seen as an alternative form of financing that was filling a gap in the market of early-stage, young SMEs. This particular type of venture is unlikely to be funded by traditional institutions because they are seen as high-risk. They don't have assets to offer as a collateral for borrowing capital neither a proven financial track record that can reassure about their future growth. For this reason, they usually aim for private equity funding, that has still its own limitations as a funding mechanism. The access in private equity requires a strong network or geographical proximity and the investors' requirements many times can be quite rigid for an early-stage venture. ECF offers accessibility irrespective of location or network. At the same time, it mitigates some of the risks that exist in private equity, as it allows a venture to raise the same capital from a higher number of investors so that each of them will provide smaller fraction of equity. When an investor is called to provide a smaller amount, the risk assessment becomes more lenient

and the investment decision easier. This is what I06 describes as the new model of risk assessment. As a result, more early-stage ventures can fill their funding gap and more innovations can be materialized and reach the world. This, in combination with the participatory nature of ECF, that creates a space for co-creation between the venture and the investors, leads to the democratisation of innovation. This revelation is described emphatically by I06, who is a professional impact-conscious investor:

> *"If you think in the old way the biggest probability is that you close the door in his face because you think this game is crazy. Yeah, but when you see how Google, Facebook and all these tech companies that started with a new model and there were more risks than guarantees for getting the money and getting the income, so this is the way that we must do. Think for making this kind of projects without crowdfunding. Because you can say. Well, I will lose this money is very, very probable. Using the old model. But when you know you can participate with little investment, the risk is not that high. The digital era means exponential increase in all matters, the innovation results, the income. And in this era, you cannot use the same parameters for measuring the risk. For this reason, I believe we must stop thinking based on the old model of risk. And we must take the risk together with the people in the crowd. If a high-risk project asks you to get 10 million U.S. dollars, you might not give them, but maybe you can just give $10000. And this is the power of crowd funding."*

Moreover, the collaborative nature of value-creation in crowdfunding has been also associated with the democratisation of capital and innovation. On this note. I18 supports:

> *"We use Equity Crowdfunding because it's like building the future companies in a collaborative way. I thought that was amazing because you involved people in the build of the new economy."*

The mitigation of personal biases was expressed by I18, who believes that the online nature of ECF mitigates biases related to the probability to choose based on the principles of homophily. He supports that this way ECF can break the walls of our network clusters and increase accessibility and reach for innovations, founders and investors. This observation not only results by his experience as a professional investor, but also as the founder of an established Equity Crowdfunding platform:

> *"Yes. It kind of breaks personal biases in a way because the online platform is kind of mitigating the biases we have in person, whether we feel familiar, whether we have other biases. And this is the one. And the second is about broadening the access to a bigger network. And breaking the walls of your limited cluster. Right. "*

This increased accessibility from breaking the walls of our familiar network clusters is seen as a step towards a more egalitarian world. I12, who is an impact investor and founder of an ESG Equity Crowdfunding Platform, supports this alternative form of financing that can potentially contribute to socioeconomic disparities:

> *"The crowdfunding side is extremely important because we've seen the inequality grow throughout the world, especially, I think here in the United States, the difference between the haves and the have nots is continuing to get larger and larger. So one of the reasons is we think, because most people don't have access to the equity game, so they don't have the ability to build their own portfolio. So the people who have access, the people of wealth just continues to grow their wealth and the people who don't continue to get worse and worse. When we put it all together, the idea to democratize access to the equity team through crowdfunding, some of the rules that have changed in the crowdfunding world and some of our things that we're trying to do on the mission side, it just felt like it was a good concoction and good timing. So we've been honestly lucky to have the privilege of having friends and family that have seen us succeed in some other things. So they gave us*

a little money to get started. And then we just finished our first crowdfunding campaign and learned a lot about how to do it."

Access to investment opportunities

An interesting finding in this study is that access to investment opportunities is considered important motivation to invest through ECF, not only by some Retail investors but by some Professional investors as well i.e. I04, I07, I08, I14, I21. Investors stress two related aspects. The first is the high breadth of investment opportunities. While traditional private equity relies on personal networks, ECF brings listings to Professional investors with just one click. On the other hand, Retail investors would be most likely excluded from traditional private equity. The second aspect is related to low opportunity cost. This is more relevant to Retail investors, that can invest in ventures at a lower ticket. As I07 points out:

"For many companies, later stage or listed, part of the future performance is already in the price of the equity, that doesn't happen so often in the start-ups on Equity Crowdfunding platforms, so that means basically that the price of the equity you buy through an equity crowdfunding platform might be sometimes lower when there is a good opportunity so you buy cheaper than the anticipation for future growth actually or not anticipation the future growth result might be surprising in that way so the margin for profit can be higher"

Networking

Several investors i.e. I03, I04, I05, I08, I14, I20, stated that networking is among their motivations to invest through ECF. Networking is for clients or job opportunities, for connecting with other investors and for recognition are the highlighted benefits.

Findings reveal that the only objective that is not bound to a particular type of investor is networking for clients and job opportunities. Investors that are providing professional services, such as legal, marketing and accounting, stress that communication with the companies, advice sharing or mentoring, can lead to the provision of paid consultancy. For example, I03, who is a Retail investor and provides legal services, states:

> *"Another motivation is to work with the start-up because I generally get more clients. So you can say that is a conflict of interest, but that is there. But I generally provide them this. I can offer advice free of cost if I'm discussing with them over a cup of tea. But if they're taking my some legal services, they want to register their product, have a copyright, have a trademark. Want to go for the patent one to register them as a company? Want to file their annual benefit for all that services? I generally charge according to the market rate. I never do anything for free because then I think that the other party is not taking me seriously, so I generally charge the consultation fees and also like I'm a corporate lawyer, so I just provide them the legal services as well. "*

On other occasions, for less experienced investors, networking can bring opportunities for taking a position on the board of the company or an operational role. Such an example is I14, who is a younger, professional investor who aims to gain more experience:

> *"I got in touch last year and she kind of offered to be sort of bit of a mentor, if you like. I was sort of my own business and running my own business and she kind of offered sort of bits of guidance and wisdom and help from one entrepreneur to another. But since then I've begun working full time as an employee. So I'm not in need of those sort of bits of advice, but they're still taken on board, but I'm trying to foster a relationship so that one day, hopefully within the next two to three years, that I can start working with her on the actual board to try and be like a non-executive director."*

For Low-Tech Professional investors, networking is aimed at connecting with other investors. Professional investors that are principal investors in projects are very likely to pre-agree with other investors to participate in a campaign. At the same time, Low-Tech innovations, such as real estate, co-housing, belong to the capital-intensive industries. In these cases, the funding capital cannot be easily split in different, subsequent fundraising rounds and the requirements for initial capital are high because of the fixed-high costs of land and property. Hence, networking with other professional investors in order to create a joint, bigger capital pool is a critical dimension for the materialization of Low-Tech innovations in the first place. On this note, I04 comments:

> *"It is (his participation in ECF) 80% networking about investments. Also, for your professional benefit from your other activities. Being able to network with the fellow, you know investors. At least we know that in order to be able to join the club we need to have certain steps, level or certain income level in order for us to be able to sustain that investment at that time. So it's kinda like good chance for the networking activity."*

Networking for personal recognition was expressed as a driver for Professional Investors. ECF appears as a vehicle for publicity and recognition for big, Professional investors, such as Angel investors. This recognition can subsequently bring more investment opportunities to them. I20 explains:

> *"As an investor, obviously if a brand gets recognized, the investor also gets recognized to a certain extent and then automatically there is much more opportunities for the investors opens up. So again, there's a career growth in the investment side. Also like, okay, if your brand goes up, you build up something or you may get a good return, then you can invest and sell more things. It automatically creates a cycle across."*

Personal Interest in business and entrepreneurship/ Entrepreneurial advocacy

The results of this study reveal that the personal interest is a strong motivation among many of the interviewed investors i.e. I04, I05, I07, I08, I14, I16, I18, I21. The investors that explicitly expressed personal interest as motivation do not belong to a particular type of investor, thus it appears as a driver among Professional/Retail, Regular/Impact and High-Tech/Low-Tech as well.

Personal interest is a driver that motivates individuals to be inclined towards a certain activity over others (B. Shen et al., 2003). Research around personal interest as a motivation has shown that the personal interest is developed through a continuous interaction with a subject or through long established influence in the context of a certain environment (Krapp et al., 1992). Hence, investors disposition towards ECF as a personal interest activity is not surprising given that, as presented in 4.1, the vast majority of the investors in this study (21 from 22) have previous entrepreneurial and managerial experience. On this note, I08, who had been the founder of a few companies in the past, describes the motivation to invest through ECF as an alternative form of engaging with entrepreneurship:

> *"I've always had an entrepreneurial spirit. So that's kind of how I probably got into what I'm doing now. I kind of started off in that field and then looking for ways to re-enter the entrepreneurial spirit."*

Personal interest is perceived as a self-expression due to interest in business and entrepreneurship, as a hobby to have fun or as a learning medium for their subject of interest. For instance, I05 describes the satisfaction of participating in ECF, similar to the satisfaction of reading the Financial Times:

> *"You know, so it's almost like reading a mini version of the Financial Times you can go in. You know, once a month or once you know periodically and read all the updates of the*

companies in which you've invested, and think well, they're doing well there. There, there not doing so well or I need to watch that one. I go in at my time and my pleasure to have a look and see if there's anything interesting."

Personal interest appears such a strong motivation that one small, retail investor stated that even if he hasn't seen significant returns so far, he will still keep on investing:

"Quite honestly, even if I had to go through another three or four years of maybe losing one or two companies and not really making much on any others, I still keep going because it's sort of like innate. It's kind of like natural for me to be involved in that."

Access to intangible assets

Although access to intangible assets has been illustrated as a motivation by only one investor, I01, it is worth noting due to its importance for the investor that invest large amounts of capital. Non-financial assets include Intellectual Property (IP) and strategic partnerships. Professional investors that invest and work with a portfolio of innovations, might act as mediators between those companies so as to share the intangible resources and therefore benefit the performance of their whole portfolio. Furthermore, access to intangible assets is seen as a risk mitigator for the investments, as, in case a company goes bankrupt, the investors can acquire IP ownership as compensation to use in their other companies or re-sell.

"Sometimes we (him and his venture partners) pick on something because they have a technology that we don't have and can potentially use. And even if their own business is not doing well or closes down, maybe we can acquire IP ownership when they liquidate. So there might be some patents or some software copyright, whatever that we can inherit and becomes ours. So the story is once it gets to risk management, then that means, yeah,

give me your IP. Yeah, give me your stuff. No, I mean, you know, you gave the returns like, this company (an example from his portfolio) has good revenue right now. It's making profit . It's three million US. But even that we are trying to get the IP so that we can use it in other projects. This is exactly what we're doing. We do look strategically beyond the financial investment. What can we get from there? Yeah, yeah. Ok. So maybe channels, they may have good customers that wow, you know, you have signed up Facebook for customer? Well, I want Facebook to be my customer as well. Yeah. So that could be an asset, too. So it is as well about intellectual property and strategic partnerships."

Gamification element in ECF

A few investors in this study i.e. I04, I08, I14, include among their motivations to invest in ECF the gamification element that is inherent in this type of platforms. These investors perceive the ECF investment process as a "game" challenge suitable for business-oriented individuals. Scanning the available listings on the platform, identifying those of interest, trying evaluate the companies, following through their growth journey, makes the reception of a financial reward feel like a game prize and acts as a self-confirmation mechanism. One investor, I08, draws a parallel between the gamified experience of the stock market and the gamified experience in ECF. This experience is described representatively by I14:

"There is also this kind of gamification element on the platforms, right? The personal interest in business and certain industries and at the same time this kind of gamified element of making the right investment of seeing how things are going to happen. And hopefully one gets a return and you see the companies develop successfully."

Supporting FFF

In the domain of entrepreneurial finance, there is a popular saying that the first investors a young company will reach out for funding belong to the FFF i.e. “Family , Friends and Fools” (Kotha & George, 2012). This has also found to be valid in the case of online ECF as well. It is observed that the majority of investors in the first week of an ECF campaign belong to the FFF group (Abrams, 2017). It is not surprising to find that some investors i.e. I03, I04, I12, I15, are motivated to invest through ECF to support a family member or a friend. Interestingly, this motivation appears more relevant to Retail investors. On this note, I15 mentions:

> *“If I know the person or the team that's already there. And that's, that's a no-brainer. It's like just giving money to your friends and supporting them”*

Re-investing on gained trust

Another motivation to invest in innovation through ECF is when it concerns subsequent funding. I08 indicates this as an investment strategy, according to which, he rarely invests large amounts in the first round of fundraising. He uses the first fundraising round as a pilot to test whether the company is trustworthy and if he gets positive signals, he will participate in the second round with a more substantial amount:

> *“If I don't ever hear from them again, and then six months later they do another raise, and I didn't hear from them from the last raise. I am not investing in their future raises. It's like you ghosted me between my last investment in, you're dead to me, as Mr. Wonderful would say. But the companies that actually do communicate and I've had some of them that have monthly newsletters that they send out to their investors, and they let you know all the steps of the way because they're a communicative into if their company actually seems like they're hitting the milestones that they need to be hitting to be going forward.”*

Tax incentives

Tax incentives when investing through venture capital firms are given by governments in several countries, like in the UK [9]. Tax incentives haven't been mentioned as a motivation to invest through ECF though. This motivation has only been mentioned by one Professional investor i.e. I05 as a motivation to invest in domestic companies compared to overseas. This is in line with prior quantitative research, that does not find tax incentives a significant reason for investors to invest through ECF (Vismara, 2018).

4.1.2 Innovation

Findings reveal that the decision to invest in an innovation in Equity Crowdfunding relies heavily on the two vital components of a young venture: the innovation and the team. These results emerged in two ways. First, further to the investors' motivations that have been described previously, the rest of the identified criteria cluster naturally into these two categories. Moreover, many investors i.e. I01, I02, I03, I04, I05, I07, I08, I11, I15, I17, I19, I20, I22, stated explicitly that, when they invest in a young venture, they base their decision on these two criteria: innovation and team. For example, I03 states:

My investment criteria are very simple. It's the innovation and it's the team.

[9] https://www.gov.uk/guidance/venture-capital-schemes-tax-relief-for-investors

Innovation as an investment proposition

Investors were asked to elaborate on their views about innovation in general and in regard to the role of innovation in their decision to invest in a venture in Equity Crowdfunding.

Investors find innovation essential for a young venture to succeed, thus they consider it essential part of their investment decision. Several investors i.e. I02, I06, I08, I17, I21, I22 state explicitly that they consider the innovativeness of key importance for the venture to gain competitive advantage and market share and consequently bring returns.

Perceptions on the definition of innovation

All the interviewed investors [I01-I22] support the notion that *novelty* is an inherent characteristic of innovation. They perceive novelty as the improvement or differentiation from a past product, process or method. This is well-summarized by I21:

> *If I have to define innovation, I would say it is a really new way. And this can be either faster, cheaper or different; a new way to satisfy what the customer or the market needs.*

However, they don't consider novelty of an innovation sufficient itself, but only when it is combined with its *applicability*. Investors highlight that an innovation needs to be able to be applied in a relevant and appropriate way in order to satisfy a specific user need. Thus, applicability is about providing substantial value to the users of an innovation and the ecosystem in which it will be introduced. On this note, I17 described the meaning of

applicability by providing an example of a novel creation that failed to satisfy users' needs, the Segway Personal Transporter [10] [11]:

> *The thing is that innovation is really hard to measure. Right. Because, you know, what is innovation? Is an electric scooter innovative? I don't know. It's convenient, it's new. Yes. But, you know, I think innovation for innovation has no sense, but only if it really solves a problem. So, the point is not how new something is. Is the product or the service better or cheaper? If yes, then it's good. But if it's innovation for the sake of innovation, like, for example, remember the Segway, like 10 years ago? The thing that had two wheels and you could go wherever. So, this was supposed to be very "innovative". But no one used it. Because… was it better? Not really. It was raining and you know you couldn't really use it. It was not stable, it was dangerous. Was it cheaper? Like 5,000 USD? No. So, innovation needs to serve a purpose. It didn't make something simpler, faster, cheaper or better.*

Perceptions on the typology of innovation

The findings indicate that a large number of the interviewed investors do perceive two different types of innovation. Their classification is based on two parameters: the degree of novelty and the degree of availability of a market for the innovation. Although not many investors were

[10] https://www.wired.com/2015/01/well-didnt-work-segway-technological-marvel-bad-doesnt-make-sense/

[11] https://edition.cnn.com/2018/10/30/tech/segway-history/index.html

familiar with the respective terminology, their descriptions fall under the well-established terms of *incremental* and *radical innovation*.

The first type of innovation they distinguish is *incremental innovation*. They define incremental innovation as a novel improvement of a past innovation for which there is an existing market. According to the interviewed investors, i.e. I07, I08, I10, I17, I21, the novelty of an incremental innovation is related to amplifying substantially the value for the user of the innovation compared to the past innovation. This improvement can be related to time, cost, user experience, industry/business efficiency and societal or global challenges. Moreover, an incremental innovation is considered to target an existing market. The affinity between the old and the new incremental innovation indicates that users have already been trying to satisfy a specific need they have. Therefore, the customer need has already been manifested. The role of incremental innovation is to satisfy this manifested need in an improved manner and this is what motivates the users to abandon the old innovation and adopt the new one. For this reason, an incremental innovation is perceived to target an existing market.

The second type of innovation that the interviewed investors identify is *radical innovation* They perceive radical innovation as something completely new that requires a new market to be created. The interviewed investors i.e. I07, I08, I17, I21, define the novelty of radical innovation as a solution to a problem that no one knew how to solve before, a completely new logic on implementing or delivering a product or service, or a proposition to satisfy latent needs. The interviewed investors support the notion that radical innovation creates a market because of its divergence from any known innovation. Hence, users might find it more difficult to understand its use or value. Furthermore, a radical innovation, in order to be adopted, might require drastic changes related to habit, systems, processes or how a whole industry works. Thus, the cost for its adoption can be high.

Disruption

Several times in academic literature, the terms *radical* and *disruptive innovation* are used interchangeably. Findings indicate that this is not a dominant perception among investors. The interviewed investors perceive disruption as challenging the status quo in a market, an industry, in society or economy. Nevertheless, several of them stress that disruption can come from incremental innovations as well. One example which illustrates this viewpoint is the emergence of challenger banks or neobanks [12] [13]. Challenger banks, like Revolut [14] and Monzo [15] appeared around 2015 with the initial aim of offering regular banking transaction services online or mostly online. Tasks such as setting up a bank account, issuing a debit/credit card, transferring funds and executing payments could be performed with one click over a mobile application. While traditional banks had already developed online banking as well, their processes were bound to bureaucracy. Several transactions would require a visit to a bank branch, while the user interface of the traditional online banking was not very mature. Challenger banks, as their name suggests, emerged and challenged the domain of financial services by offering a substantial improvement. This wasn't initially due to the provision of radical innovation. Challenger banks became popular by offering services exclusively or mostly online and simplifying every day financial transactions, offering a good user interface and an alternative to traditional financial institutions. Challenger banks were born a few years after the global financial crash in 2008, at a time that the respective consequences were still observable and the trust towards the traditional banking sector was still being questioned. At the same time, digital and web technology was becoming more and more mature and different sorts of products were

[12] https://thefintechtimes.com/what-is-a-challenger-bank/

[13] https://fintechmagazine.com/banking/difference-between-neobank-and-challenger-bank

[14] https://www.forbes.com/sites/daviddawkins/2021/07/15/founder-nik-storonskys-net-worth-more-than-quintuples-after-revolut-becomes-uks-most-valuable-fintech/?sh=282b1b4668d5

[15] https://www.cnbc.com/2020/02/27/how-monzos-tom-blomfield-went-from-silicon-valley-to-starting-a-bank.html

being incorporated into the everyday life of users, setting very high the standards of user experience. Therefore, challenger banks satisfied manifested user needs that the traditional banks couldn't meet and subsequently achieved a remarkable popularity[16]. The large-scale adoption of challenger banks globally challenged the status quo of retail financial services from that time on. Banks started losing large volumes of transactions and funds. For example, in the UK, they account 2 of the 5 most popular banks in account switching statistics (Monzo and Starling) [17]. Challenger banks gained popularity and trust from users and investors and this consequently propelled the development of radical innovations from these new organizations. This impact was reflected in the whole industry and was accompanied by the growing emergence of new FinTech startups and a switch of focus for traditional institutions as well, which realized the occurring disruption [18]. This disruption was evident in consumer behavior, in the innovation ecosystem and the business models of the financial sector. Conclusively, what was initially an incremental innovation developed by challenger banks caused a disruption in the financial services sector. This example is illustrated by I21:

> *It is not about innovation itself being necessarily something out of space or something really, really different. But even something simple can create a real disruption. If you look at challenger banks, for example, what they were doing in the beginning was pretty much to provide a much simpler interface to customers. It wasn't something crazy. It was just okay. The experience of setting up essentially a bank account, of sending money to someone or splitting the bill of paying for something was very painful and very boring ten years ago. So what*

[16] https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-dna-of-digital-challenger-banks.pdf

[17] https://www.ft.com/content/4944d1c2-f723-11e9-9ef3-eca8fc8f2d65

[18] https://www.mckinsey.com/industries/financial-services/our-insights/global-banking-annual-review

they did in the beginning is like just put a very nice user interface. Now of course you have much more. But in the beginning it was something super simple. But yet that very simple thing changed things completely in terms of how we perceive our relationship with banks and of course of the economic impact that they had in the market. So that's innovation.

If you look at Revolut, for example, right? Revolut. Now they have evaluation of, I think 30 billion. They have I don't even know how many clients now but like we are talking about, I think, more than 10 million. And they're pretty much, I mean not everywhere in the world, but they descended from the UK but now they are in the US, they are in Singapore, they are in Asia, they are in Europe, all around Europe. Basically, I mean if you take a look, they're very public about their, their achievements and everything. They really became a global bank. And it's actually interesting, you know, I mean, it's like five years. Four, five years that I teach Fintech at the university. When I asked students which challenger banks they know, maybe one or two students, the very interested ones, would know. But the majority of the class didn't have a clue. Now, it's completely everywhere. Like, if you ask who knows Revolut or Monzo, the majority of the class, 80%, if not more, will raise their hand. And this is interesting because we were really talking a lot about Fintech and people were perceiving FinTech innovations as something, how can I say? Almost exotic, almost complicated, almost niche. Then we eventually see it, right?

So, on the one side is that now customers really want this. So, in terms of customer needs and preferences, it completely changed the consumer behavior. Then you have another thing, more from an economic standpoint. Challenger banks changed the value chain of finance or, maybe, more than the value chain,

they changed the business models of finance, because the way banks, for example, make money is changing drastically. Before it was pretty much a sort of, okay, I take deposits, I lend money, so it's pretty much, you know, interest rate delta, right? While now, essentially these types of innovation had been really squeezing the margins of banks. So, apart from the usage, what changes in a way is how modern economics are done.

The subjective nature of the innovation

The findings above revealed that the value of an innovation lies in two characteristics, novelty and applicability. According to investors, the value of an innovation is not objective but is subject to its users. This is well-framed by I01, an investor and serial entrepreneur:

So basically, it was something that didn't require an extremely specialized know-how for someone to implement the system. It was the idea and when to apply. Timing. Users said it was innovative, I personally didn't think that was that innovative. But people said that it was innovative. Who had the correct judgment?

Therefore, many of the interviewed investors i.e. I01, I02, I07, I13, I14, I16, I17, I20, I21, stressed that, in order to be convinced about the value of an innovation, they require to see this value demonstrated. A demonstrated value is perceived as a positive signal for the adoption of the innovation and consequently for the financial success of the venture. Forms of demonstrated value include preliminary adoption through sales traction, customer satisfaction through customer reviews and the rate of customer retention. On this note, I13, states:

Obviously, the turn rate, the adoption, are things that we want to see as well. Like how many of the customers that, let's say, come on to the platform -if it's a platform- or buy as repeat customers or they stick with the platform, let's say if

it's a subscription-based model, for instance. So, we want to see like high turn rates and high adoption rates there.

Initial signals of adoption and customer satisfaction are seen by investors as a type of soft collateral to their investment. Primarily, these signals are expressed through sales, customer feedback and customer retention. However, this might not be possible when a young early-stage venture is developing a radical innovation. Radical innovations create new markets, therefore there are high uncertainties around the diffusion of innovation. Consequently, radical innovations are perceived to be of higher risk than incremental innovations. Several interviewed investors i.e. I01, I02, I14, I15, I16, support the notion that when they invest in a radical innovation, the "soft collateral" of sales can be complemented or interchanged by certain strategic advantages. These strategic advantages are related to assisting the successful implementation and adoption of innovation and act as a key differentiator for competitors, making it harder for others to enter the market. Strategic advantages include strategic partnerships that guarantee testing and preliminary adoption of the innovation and access or ownership of rights for significant strategic resources, like intellectual property, data, materials and equipment. On this note, I16 emphasizes that there are only few exceptions to the rule of proven traction in his investment decision. An example of such exception is investing in an early stage company with no revenues[19] that develops a radical solution to extract left-over minerals from old mines[20]. Minerals are in high demand and increasing value (big market size and high market growth). Moreover, the extraction of minerals is challenging not only due to the technology involved, but also due to the rights on the land and the environmental impact

[19] https://cornishlithium.com/wp-content/uploads/2021/09/Cornish-Lithium-Annual-report-2020-1.pdf

[20] https://cornishlithium.com

(hard in this industry to follow market trends on environmental protection). The minerals company is developing a sustainable engineering solution to extract minerals by partnering with the mine owners in Cornwall. The technological innovation, the sustainable approach and particularly the strategic partnership promise that their innovation has a high chance to be successfully implemented, adopted and to provide revenues and profits. Particularly, the partnership with the mine owners can provide the necessary test-bed for implementing and improving their innovation, guarantee revenues from the extraction of minerals within the investment horizon and at the same time provide a positive signal to the market to promote further adoption by other mine owners in the country.

So I consider a real problem, that can be like based on the end user experience, real life problems, everyday life problems and the also bigger ones. Yeah, well, you want to see the applicability of innovation, you need to be able to understand the applicability in that sense. And you can understand this from the revenue growth, for example, you might have this- is it is very important. I haven't mentioned. But uh, you might see a business that's very small. But has some revenues. It's very difficult for me to invest in a business that's doesn't have revenues but I have still invested in this one with the hydrogen, they don't have revenues, but if they succeed, they're gonna be like 20 times your money at least. Yes. Or in the Cornish lithium or Gravitricity. And rights and rights, they need to have the right. So Cornish Lithium, for example, has the rights in Cornwall. So that's the factor that says you that yeah, they're not saying something out of their minds, you know, ridiculous. They have the right to go there. They have the reports finally assuming very high concentration (of minerals), I think it's one of the five highest in the world, and that provides a competitive advantage to the UK to attract and manufacturing companies to plants and produce because that will

have a local supply. You don't need supplies from Kilimanjaro or from wherever. But for a business that solves the solution with the software and things like that, you have to see revenues definitely. Yes, and you have to see that they grow and they scale. You have to see a pattern in the growth. Yeah. They grow this way because they will do a projection. So you have to understand if the projection is right or if the projections is even half right, they might project that in 2024, they will have 200 million in revenue. And you might say, OK, if they do 80 million instead of 200, will my investment grow? It will definitely grow. Is it possible to do 80? Maybe, maybe not. You know?

Complexity

Many interviewed investors i.e. I02, I07, I08, I12, I16, I17, I20, I21 stressed that innovation, regardless of its type, needs to be "simple". They perceive simplicity both from the perspective of implementation and the perspective of applicability. In respect of implementation, they support that an innovation with high complexity in the implementation stage has a high chance to fail before it reaches or is scaled up in the market. Implementation complexity can amplify uncertainties regarding the delivery of the innovation and therefore amplifies uncertainties regarding providing returns. Moreover, adopting an innovation many times is challenging due to the inertia of habit or due to the required radical changes, as described above. So, if the complexity of applicability is high, investors believe that its adoption will be even more challenging. On this note, I17 describes that simplicity is about an innovation fitting naturally to the context of application:

If the product is complicated for me to use, if the product doesn't naturally fit into my life, I'm not going to use it, so, take an example, like I don't know. The Fitbit, right? The thing to count your steps. Now no one has it. Why? Because everyone

uses the step counters on their phone. so, the point is, Fitbit was a good idea. But the experience of the product, of like having to charge something, put it on your wrist just to get steps didn't make sense when you could have exactly the same thing with a device that you already charge and carry with you anyway, but for multiple more reasons. How natural does it feel using it?

Scalability

Another characteristic of innovation that emerges from the findings is scalability. Many interviewed investors i.e. I01, I02, I07, I08, I10, I16, stated that the potential for an innovation to scale up in the market level is a dimension that they take into account in their investment decision. They perceive scalability as the ability of an innovation to gain a bigger market share from a primary developed innovation. According to the findings, this can be achieved in multiple ways.

Firstly, through a business model that establishes diversified revenue streams. For example, through product sales, licensing, subscriptions, brokerage, advertisements etch. Diversification of revenue streams is seen as a method for promoting the adoption of an innovation and consequently supporting the financial survival of the young venture that relies on that innovation. Moreover, it is seen as a strategy of scaling up in the market by capturing different user segments who have different needs for the usage of an innovation or different level of purchasing power. This aspect of scalability is illustrated well by I16:

Scalability is another criterion. You can understand this from the business model, for example, Gravity City [21] [22], this company with the wells and the weights. They

[21] https://www.bbc.com/news/uk-scotland-56819798

[22] https://gravitricity.com

said, yeah, we're going to build a prototype, then we're going to build a real project. They've done the prototype, so it's been two years and they did it on time, so they're going to do a real project and then they will sell the technology to others that want to do it. So that's a scalable model, simple model. That's very scalable. Yes, they can go to new markets, they can persuade people to attract new clients. Another example, Freetrade [23]. They had a marketing strategy that said call a friend, give the link to the friend to join us and you both take free stock, so this costs them ten pounds, to acquire one person. But other companies might pay 20 pounds through advertising. And I've seen freetrade, they have grown a lot. I've seen them on YouTube, because, I go to my investment YouTube to see videos and free trade has an ad there, so I'm very happy about that. They have enough money to do right now. Yes. So, you see a scalability. And if they go to a new country, to a new market, that's scalable.

A second way to achieve scalability according to investors is through the diversification of an innovation into multiple products. An innovation that was initially designed for a particular user group or industry, might be able to receive minor modifications or be rebundled in order to serve the needs of a different user group or different industry. On this note, I02 notes:

I think like for investing in an innovation, it could be desirable to see how many new products they can generate from the original innovation. The original

[23] https://freetrade.io

investment may focus on one single product for one single service and then during this investment process say one year they come into two or three.

The third way that investors indicate to achieve scalability is through the ability of the innovation to be adopted in different geographical markets, beyond the initial market in which was introduced. They stress that cross-country competitiveness is very important in the internet and globalized era. The high penetration of the internet and the rapid digitalization enabled a higher pace of producing innovations and led to shorter product life cycles. Moreover, the high information accessibility and the high mobility of the workforce expedites imitation or development of innovations in different markets. Therefore, they perceive scalability as a significant characteristic of an innovation to sustain relative advantage, match the competition and gain a higher market share. This revelation is well-described by I10, who has vast experience as an experienced investor, entrepreneur and founder and manager of an Equity Crowdfunding platform:

The thing about innovation nowadays is that it has much far-reaching effect, right? When you innovate in one sector or in one process within a certain sector. Previously, before technology was widely available, when you disrupt or innovate, you innovate in your own vertical, in your own company, in that one process that you're doing. But now, very quickly, when you innovate, let's say, some accounting process, straight away, you don't apply in one industry, but you immediately see the potential of scaling across multiple industries, across multiple countries, languages, and therefore disruption happens. Also, there's always a life cycle to things. And, now, with information becoming increasingly ubiquitous and accessible to all, destruction just tends to be accelerated. It tends to happen more frequently. People having well at their disposal, more information and more tools are able to bring about innovations much faster than

you did before. And therefore, you can prematurely end certain business cycles and start new ones.

Market context

The findings indicate that most of the interviewed investors i.e. I01, I02, I03, I04, I05, I06, I07, I08, I09, I10, I11, I14, I15, I16, I17, I19, I20, I21, I22 consider the market context as a significant criterion in their investment. Specifically, five aspects of the market were identified as having high importance in their consideration: market size, market concentration, market growth, market regulation and the sociopolitical character of the market. They perceive market size as the number of potential adopters; market concentration as the degree a market is serviced by competitive offerings; market growth as the pace at which a market will grow in the future; market regulation as the laws or rules with which an innovation needs to comply. The first three aspects can be interconnected in some cases. When an innovation serves a new market that is emerging and appears promising for growing bigger in the future (market growth and size), is not yet be highly saturated by competitive firms that offer similar products (lower market concentration). In this sense, markets that are aligned with emerging industry trends, such as emerging technologies and services (blockchain, crypto, cloud) and socioeconomic themes, such as health trends and environmental protection, are considered preferable. Such an example is described by I05:

So, this is about how it connects to the market or another side of the market that is not a served so far. For example, I invested in a company that produces organic noodles. I don't think that there are many organic brands of noodles, right? Since I know about Asia, I know that, so far, they have not been focused on organic products very much. But I also observe that this is gradually changing.

So, that was a differentiator in the service that drove my decision to invest. So, their innovation was tapping into the theme about, you know, knowing the origin of your food and the quality of the food and all the current emerging health trends. So, it was their products tapping into new market themes.

Regarding the fourth aspect of market regulation, the interviewed investors stressed that it comprises an important dimension for investment. Regulatory compliance is considered as a signal of trustworthiness of innovation, even in cases in which complying with the regulations is not compulsory. Regulatory compliance acts as validated proof for certain features of innovation, such as financial transparency (securities regulations), data privacy (GDPR[24]) or green features (e.g. greenhouse gas emissions). For example, I22 referred to his decision to invest in a FinTech company:

I think there it is the only regulated platform in the country in this sector and that's not just a number, but it means a lot of stuff as a consequence. So it means that we can talk to institutional investors. It means that we have decent auditors, especially for people who want to invest on the platform. It means the people feel safe to use if. Being regulated makes a massive difference.

On the other hand, regulatory uncertainty around an innovation can cause impediments when an innovation is about to be scaled-up in the market. This is particularly relevant to emerging industries, such as cryptocurrencies, for which, in some countries, the regulations are new and fast-changing, and in other countries are completely absent [25]. For example, I07 mentions the

[24] https://gdpr-info.eu

[25] https://complyadvantage.com/insights/cryptocurrency-regulations-around-world/

example of a successful FinTech innovation he invested in [26]. This venture was conceived in Chile when there was no regulation in place. It has been successfully growing and profitable for several years after he invested, until the venture eventually went bankrupt when the local banks suddenly banned crypto trading accounts. The decision from the bank was based on the ground of lack of regulation and the related implications regarding the transparency of the financial transactions by an unregulated entity, such as the crypto trading platform:

> *I invested like five years ago in a company that was a crypto marketplace and, as you know, most of the crypto marketplaces have grown a lot. And this one went bankrupt after a few years. So, this company was based in Chile, okay, and the problem was that the banks, all the banks in the country, blocked the accounts of every crypto exchange in Chile, so they weren't able to operate for four or five months as an industry, not only this one, yes, so basically it wasn't the tax department, it wasn't the tax ministry, no no, it wasn't the government, it was the banks, they closed the accounts of these companies as they perceive high risk, they didn't understand the business, I don't know, they decided to close it because they considered it is a high risk for the financial system of the country? the private banks are private entities, they don't have to worry about the financial sustainability of the country, they should not at least, so I don't know, was like a very weird move and that killed the industry in the country.*

Last, several investors i.e. I03, I04, I10, I18, stress that the sociopolitical context of the market influences their decision to invest in an innovation. The concern comes from investors that invest in countries in which sociopolitical characteristics have high influence on the development and adoption of innovation. Their descriptions revolve around different forms of

[26] https://finance.yahoo.com/news/chile-court-says-banks-ban-224512864.html

corruption, such as fraud, money laundering, lobbying and favoritism. For example, investors mention, as example of fraud, frequently encountering founders performing fictitious fundraising to serve purposes different from developing the actual innovation and eventually dissolving the venture before the innovation enters the market. An example of money laundering includes investments to legalize capital from illegal activities and not for investment purposes. In this case, legitimate investors do not want to be affiliated with the illegitimate ones. Lastly, investors mention that in certain countries there is a requirement for extensive lobbying in order to ensure favoritism in getting subsequent funds, grants or promoting the adoption of innovation within the private sector. In all cases, these investors stressed that, when investing in the specific countries, "it is more important to know *whose* the innovation is rather than *what* is the innovation". Therefore, they highly value the credibility of the founders and the other investors, as well as their network and sociopolitical influence. On this note, I18, who is an investor, founder and manager of an Equity Crowdfunding platform, explains a solution he applied to his platform in order to create trust in a market that a high rate in fraud and money laundering:

> *If you go to a campaign, we have all the information open, and, if you go to investors, you can see the name of all of them, you don't see how much they invest, but you can see the name. So, we thought that this will create trust. Also, in our culture, failure was seen as a really bad thing. So, I don't want to be related to failure. So, of course they ask us "don't show my name". And we said no, if you want to invest, we will show your name because you have to be proud that you are investing in innovation, startups, talent, whatever. So, in the beginning we had a little bit of friction, but afterwards the platform works like that. So, everybody knows, okay, that's something that also creates trust for them, because they can see who else invested and also because fraud in (the specific*

continent), not as much in (the specific country). Money laundering is a huge thing here. So, what happens if somebody who performs illegal activities invests, is a concern in (the specific continent).

4.1.3 Team

Team characteristics are the most high-ranking criterion for investing in an innovation through ECF. Many investors, i.e. I13, I14, I18, I20, I19, I22, I02, I17, I10, the vast majority Professional, prioritize the evaluation of the team as equal to or more important than the evaluation of innovation. They believe that a good team is going to attract the right resources and operate in an efficient way to successfully execute and commercialize an innovation. For example, I10 comments:

"No, it's all about the people, especially for early stage, private companies because all you have is the founder. You're going all in on the founder. When you buy a big, listed company like Google, you're buying the governance of the board, you're buying the expertise, you're buying the divisional heads expertise and you're buying so many parts of the company. So I would then, then you do your typical duties for big public company, right? We're going to the data room. And we go through all the financials, our mapping into a into a spreadsheet and I will crunch that spreadsheet to the ends of the Earth. I will then compare with all the comparables in your space up. So that's the public markets due diligence process, but not in private markets. No, there it all comes down to the founders. I don't look at innovation as much as I look at the quality of the founders."

Team professional competences

All the investors [I01-I22] indicate team competences as a key-criterion in evaluating the team potential. They associate team competences with the team's relevant professional and industrial experience, the educational background, their operational capability and any prior entrepreneurial experience. The findings show that among all, the most important is considered to be the professional experience that is relevant to the nature of the innovation they are developing [I01, I02, I03, I04, I05, I07, I08, I11, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22]. Relevant professional expertise is seen as a key-dimension for the team to be able to achieve success in the implementation of the innovation, to understand the market needs and to leverage their network for knowledge resources and clients. This is well-explained by I01:

"So the judgment will come from basically how experienced a team might be in that area. So, so yeah, domain of the business execution and then understanding the pain point. Right? If you are in the business, you understand the pain points and then you can think "if I can do this technology, then I can solve this problem". Then there is opportunity for growth. Or you might have your customers telling you that they need a solution. So the customer engagement process will allow the innovation process to start to spin faster. So one is understanding the business and the other is the network. Right? You can go to the customer right and then come back, saying I'm there. I want to speak to this people. So I want to understand better this market because I'm not from that trade. I'm looking at all this research report and transactions and the historical record of all these other companies that are in and there seems to be already a market for customers themselves. And then remember, if I come up as a new competitor, what do I have to deliver in terms of innovativeness in order to lure all these customers to come in?"

Educational background is not found to be a crucial criterion by many investors i.e. I03, I05, I11, I13, I16. Attending elite schools is preferred by some investors, but the rest are more interested in the story of the entrepreneurs and their drive to overcome obstacles and succeed. Findings do not show correlation of this criterion to the type of investors. For example, I12, who is a Professional Impact investor and founder of an ESG Crowdfunding Platform, states:

> *"They don't have to all have gone to an Ivy League school or Hong Kong Polytechnic or something. School is good. But if they have a good story, I take that into account."*

Investors associate operational capability with efficient planning, meeting milestones and bringing results. The results indicate that operational capability is taken into account more by the professional investors i.e. 02, I07, I10, I20, I21. On this note, I02 comments:

> *"To keep people in good climate try to make the time shorter, break short and feasible milestones, okay six months less than one year, maintain the dynamics or the momentum, people cannot survive more than one year on the same task, a long term task might create friction in the team dynamics"*

Last, prior entrepreneurial experience is also found among the criteria for some investors, mostly professional i.e. I05, I10, I14, I16, I18. Although important, some investors believe that this is also conditional on the personality of the entrepreneurs and how receptive they seem to advice and different opinions. This is explained by I18, who is a Professinal Investor and Founder of a ECF platform:

> *"So probably what you don't want is solo entrepreneur or entrepreneurs that have not been part of startup before. But also we can fund those guys if they're really open to*

receive comments or experiences from others because that can make them gain experience in a fast way."

Team diversity

Findings show that many investors I02, I03, I06, I11, I12, I16, I17, I18 believe strongly in team diversity. The aspects of team diversity identified in the study are demographic diversity (gender, color, race, culture), diversity in educational background and diversity in the domain of the professional expertise.

An interesting finding is that the appreciation of educational and professional diversity is not associated with a particular type of investor. Investors believe that the team members, in order to drive the innovation process, need to have discrete roles and complementary skills and knowledge, in order to successfully manage the needs of the business venture. For example, I18, who is an impact investor, notes:

"We want to fund teams that are complementary, that they listen each other, that they can share their vision and are not punished by the other. For example, if there's a technological tech company, you want somebody that is a CEO, you want a CTO, you want a COO, that's something that you really want to have in this team."

The demographic diversity is supported mainly by impact investors i.e. I03, I06, I12, I18 and only two regular, I02 and I11. However, the rationale among these two types of investors is different. Impact investors view demographic diversity in a team as a way to support egalitarianism in entrepreneurship and society. On the other hand, regular investors view diversity as a signal that the founders are open-minded. Being diverse and open-minded is perceived as valuable trait for spurring innovation and growth. On this note, I02, who is a regular investor, states:

"Diversity for innovation is important, to make sure to create innovation is to bring people from very diverse backgrounds and from different races okay hire people from India, from Japan, people from Russia, from Poland, so start getting people mixed up"

Moreover, one regular investor, I11, states that demonstrating team diversity is important because of the imposed ESG standards in the investment industry. Therefore, a young business venture, in order to secure subsequent rounds of funding, needs to follow the emerging norms and tick all the boxes.

Founders' commitment

An important criterion among several investors i.e. I03, I07, I08, I10, I11, I14, I18 is the commitment of the founding members of the venture. This is interpreted both as financial and non-financial commitment. Investors believe that such commitments will drive entrepreneurs to make all the required sacrifices so the venture will succeed. On a financial level, investors expect the founders to initially dedicate their own funds to the company. They expect the financial commitment to the company to be proportionate to their individual financial background. This is well described by I07:

"You usually know how much they have invested as founders yes so how much of their personal money they put as an initial uh fund exactly yes wow um very interesting and that will always depend on the profile of the person for example if someone is a high executive in a company in a multinational and invest i don't know 50K it might not be so much for him so it will be different if someone doesn't have that background and based 50K USD"

Financial commitment also implies the degree of control a founder has over the company, which is seen as an indicator of confidence in their ability to grow the venture. I10 mentions:

> *"You don't want a WeWork agent in our situation where he owns only 5% of the firm and controls the entire company."*

On the non-financial level, they explicitly support a team working full-time with dedication on the venture as the only way to success. A venture with part-time executives or employees is expected to fail. On this note, I21 comments:

> *"Maybe the founders have another job. It's a bit of side gig. Maybe they just need it because they have this cool idea but you know doesn't even look like a start-up. Then I will skip because I don't think they would really be able to make it."*

Team's character and personality

The results suggest that the character and personality of the founding members and the core team are considered as one of the most important elements in the investment decision i.e. I01, I02, I03, I04, I08, I10, I12, I13, I16, I17, I18, I20, I21, I22. The team's character and personality in an investor's view include integrity, humbleness, receptivity, sensibility, grit and communicativeness.

All the types of investors seem to be concerned about various traits of the character and personality of the founders. Nevertheless, there are some variations on the respective perceptions among Professional and Retail investors. Professional investors appear more focused on the integrity, humbleness and receptivity, while sensibility, grit and communicativeness is considered important by all investors. Integrity and humbleness is associated with financial management and keeping promises. They expect the team to use

capital wisely instead of spending investor capital on unnecessary marketing, public relations or covering their own expenses. For example, I01 notes:

> *"Initially, they even spent a lot of money in branding it. I remember when they created the logo, they hired a very expensive company to do it. Why do such a thing if you are not a consumer brand? And then they ran around with focus groups. And when they launched a party in Singapore, I went there. They have a launch party in a luxurious hotel in Singapore with a very nice outdoor. They booked the entire hotel. It was almost like a wedding. They had games, they have pokers and stuff. And they did a lucky draw with a Tiffany jewellery. And the money comes from who? Investors."*

Furthermore, they expect founders to have a humble personal lifestyle, as they consider it a signal for future reliable financial management. For example, I10, who is a Professional Angel Investor, supports:

> *"Half the time. I don't need a day. Show me the deck. I look at the first two pages. I'll put it aside from my questions. I start observing, what do you wear? Are you wearing a flashing watch, you come to the meeting late. Are you talking to my investors in a correct way? Are you answering their questions? How does the person behave? What's his character like can I trust this guy or when I bring start-up founders to meet our investors and investors ask for questions and the founder promises them to follow up with a document, a pdf, I watch and I'll try to see how many days do you actually take to get back to this investor because if you don't get back to them, you won't get back to me"*

This finding is expected, as Professional investors usually invest larger amounts and require more in-depth personal contact with the founders. Their assessment about integrity and humbleness is based a lot on their impression through personal contact but also through

reputation checking via professional networks. For example, I10, who is Professional investor and founder of an Equity Crowdfunding Platform, mentions:

> *"So, you can also ask around the market to see what the market says of this person. Check the supply channels, is he a man of his word? Let's see who is delivering on what he says is here. Yeah, all these things that actually matter for private Investments, a lot of it comes down to the character of the founder. A lot of these are based on trust and Um and of course, competency right that's all, if I check around in the market and everybody doesn't have a very nice thing to say about you. That's a very big reflect for me because if you don't treat your suppliers and customers well, sure you 're not gonna treat well your investor."*

Many retail investors face higher information asymmetry regarding the founders' character and personality, as they may not have a chance to meet the founders in person. They rely mostly on online information about the CV of the founding team, the credibility of which can be questionable. Although they do seem concerned about the integrity of the founders, they rely on the good will of the entrepreneurs. This is supported by I08:

> *"The second thing I tend to look at is the team that's behind it. I'll look people up on LinkedIn to see what their job history is. All that kind of stuff. Look at what schools they've gone to and stuff like that. There's not a tone you can find out of it because they can fake a lot of that stuff. I mean, they can make a fake LinkedIn and all that stuff. So, someone's truly being just an illegitimate scammer, they'll get away with it. It's not like you're going to get around that, but I'm basically looking for people that have enough experience that whatever they're trying to get off the ground, they're going to have some capability to overcome those complexities It's not like you have much direct access to these individuals or the ability to research them significantly. You basically have a web page that lists their*

offering, and then you can ask questions on that web page, but they may or may not answer your questions, and they may or may not be incredibly honest about their answers."

Communicativeness is related to the degree to which founders regularly inform the investors on the progress of the company and respond in a timely manner on questions or feedback. It is worth noting that for Retail investors, the online communicativeness of the entrepreneurs is considered as a signal of trust. One investor, i.e. I08, uses this signal as an investment strategy. Many times he invests a small amount on the first fundraising round, to assess the communicativeness of the team towards the investors. On this note, I08 mentions:

"If I don't ever hear from them again, and then six months later they do another raise, and I didn't hear from them from the last raise. I am not investing in their future raises. It's like you ghosted me between my last investment in, you're dead to me, as Mr. Wonderful would say. I also limit my investing to the minimum because I wait to see how communicative the investor or the founders essentially are. But the companies that actually do communicate and I've had some of them that have monthly newsletters that they send out to their investors, and they let you know all the steps of the way because they're a communicative into if their company actually seems like they're hitting the milestones that they need to be hitting to be going forward."

When it comes to sensibility, investors associate it with the ability of founders to evaluate their company and to organise a development plan and goals in a reasonable manner. Although confidence is seen as a positive trait, overconfidence regarding the evaluation of the company and its growth potential is seen as a lack of sensibility and an indicator of a short lifetime. On this note, I13 explains:

"So the biggest red flags are when we see pitch decks that come our way and just astronomical valuation on the business, pre revenue, stuff like that, like very like rookie mistakes. It's like we'll have a little bit of Grace. We'll hear them out for a little bit, but we already know what time it is at that point."

Team and company climate

The team and company climate has also been included as criterion by some investors i.e. I02, I10, I16, I21. The Professional investors are focused on the founders/executives' team climate, and the Retail investors on the company climate. The professional investors i.e. I02, I10, highlighted that they prefer founders that have worked with each other or know each other and the team dynamics have been tested for a long time already. For example, I21 mentions:

"If there are more co-founders, if I know if they worked together, for example, in the past, it's a good thing because it means that they already know, you know, how the team dynamics will play."

On the other hand, for Retail investor I16, good working conditions is an indicator of team efficiency and attracting talent:

"I use Citymapper all the time, right, it's fantastic. Yes. So Citymapper sent me an email that we are going to raise money through Crowdcube. While I was researching to see what was the valuation, I thought it would be at least half a billion. The valuation was 290 million, which is very low in my mind. I think it's quite low, for one thing. So I was like, Yeah, I'm going to go, I'm going to put at least 500 pounds on them. I believe them so

much. Let's go. So they said if they raise five million, for example, on the day, the target is one, but if they raise five, they are going to close the round in the first day. So this means that you have to do all your due diligence in one day, and I was working this day. I was on site. So basically, I started doing my pre-valuation and all that. And every company when they raise money, they create an investment pitch where they show what differentiates them from all others, what makes them better, how they grow, how they grow the revenues, how all that. And everything. And I realized that they are a nine year old business. And they don't have a business model to make money. The revenue model. Another criterion is about the people that run the business and this is where you have to do lots of research. And I will explain why I didn't invest in this company because of that, although I use it, and I think it's a very nice idea. And then when I researched the people, I went through glassdoor, are you aware of glassdoor? So I went there. And I saw that there is a lot of mobility of people, so people join the business and they leave. And the problem was the CEO. They didn't know what they were doing. They didn't know what sticks with the people and what doesn't. They didn't know how to make a business model. They were changing their minds every six months and there was lots of frustration in people. People were unhappy and were leaving the business. Many reviews on Glassdoor were one out of five stars. Reviews from ex-employees."

These findings are understandable, as Retail investors, such as I16, have limited information about the company; they source it mainly online rather than by personal contact, thus it is hard to know about the team dynamics. On the other hand, the company climate is something that can potentially be assessed through the experiences of past employees that they shared online from websites like glassdoor.

4.2 The second stage of the investment process: investment monitoring and participation

The second stage after the decision to invest in an innovation over ECF is the stage of investment monitoring and participation. The behavior of investors in this stage is defined by the invested amount and not so much by which type of investor they are. The results indicate four levels of involvement: *complete*, *active*, *moderate* and *passive*.

In this study, complete involvement is defined when an investor is intensively engaging with a company in a financial and non-financial level e.g. knowledge, experience an network. This category is relevant to Professional investors that have invested large amounts of capital in a particular innovation and act as "angels" i.e. I01, I04, I05, I06, I10, I11, I12, I17, I18, I19, I20, I21. After their investment, they become immersed in the company's decision-making and activities and assist the founders in the journey towards each milestone. Their contribution can be in the domains of strategy, innovation development, business, market development, fundraising and sales. They usually help a company over a short period of time, from one to a few years, and then step out from the level of complete involvement or proceed to a full or partial exit. This process is explained analytically by I19, who is a Professional Angel Investor and Managing Director in an investment company:

> *"I pick a company because I think they can be successful. I invest in the first place because they got a great idea and a great team. So, to create positive bias we need to make sure that you don't fail for the wrong reasons. The first one is their tech is wrong, they have a great idea but the way they build the tech is wrong. Like the technology doesn't work or they can't deliver it or the DevOps angle doesn't work or it cannot scale. The second is that they don't have the skills to build partnerships and the know-how or*

resources/information to scale up, such as best practice KPIs, industry-wide marketing data etch. Third, their GTM (Go-To-Market) is vague. They don't have the capability to build and execute an efficient GTM strategy. They don't have access to the right tools to gain insights. They don't monitor efficiently their sales goals. Fourth, they don't have the capability to build engagement with customers. Loyal customers that love their product. They don't have the capability to identify customers that are about to stop using the service, e.g. inactive accounts. They lack the tools and the know-how. An angel investor with appropriate background, capital, time and network can help with all these. It depends as well on who you work with. So, in some of these businesses, I had subject matter experience, right. If you do fintech, I have subject matter experience, in most of these I didn't. So, in most of these, I had more functional type support. It's basically how you run a company. How do you present to investors? How do you raise money? How do you manage your financials? How do you run a team? How do you motivate people? How do you hire? I mean, these are all very important things for companies."

The next category of involvement is the *active* investor. This category can be relevant to both Professional and Retail investors that have invested an amount in the venture that is significant in a proportional manner to the company valuation. Their level of involvement is not as regular or frequent as that of Angel investors, but they are in direct contact with the founders. They receive direct updates, attend shareholder meetings or Q&A sessions, provide advice and network resources.

The investors who belong in the category of *moderate* involvement focus mostly on reading the updates from the companies. Occasionally, when inspired by an update or development or receive a request by the founders, they might drop an e-mail to share their opinion or resources.

Lastly, investors in the *passive* category, limit their involvement in monitoring their investment and never participate.

The findings reveal that the approach of many interviewed investors towards monitoring and participation is more related to the invested amount rather than to which type of investor they are. Therefore, they occasionally oscillate across the four-category spectrum of involvement. For example, I08, is a professional (sophisticated) investor who, through ECF, invests both small amounts, that he defines as lower than 2000 USD, as well higher amounts, from 2000 USD – 40000 USD. Based on that, he oscillates between the active and passive levels of involvement. He states that when he invests smaller amounts, his approach is mostly limited to reading the updates and monitoring the progress of the company, while for higher amounts he seeks personal contact and regular updates with the founders:

> *"So, for the smaller companies, the smaller investments I do, if I'm investing whatever the minimum is, I don't really worry about that. I'm not interested in spending my time chasing a few hundred dollars investment. It's literally just throwing money at something and seeing if it sticks. And if it sticks, then I'll pay attention to it and probably invest more any future around. But for the companies that I do invest larger amounts in, I'll reach out to those companies. I generally try, especially if I'm investing a large amount of money. I want to be on a first name basis, essentially with the CEO and President and the other individuals, because if I'm going to drop a couple thousand dollars or tens of thousands of dollars, I want to make sure I know who these individuals are. And so for all of my larger investments, that's generally true for anyone who's probably less than 100 million dollar valuation, it's generally not hard to be on a first name basis with those companies that are on that smaller size."*

Although the level of financial investment is the major parameter that defines investors' involvement, some investors i.e. I04, I05, I10, I11, highlighted that it also depends on the founders' attitude and character, how open, how receptive and relationship-driven they are. On this note, I10, who is a Professional Investor and Founder of an ECF platform, explains:

> *"Well, so it really depends on companies. Some companies would prefer that we remain a bit more passive, but we will minimally at least require quarterly updates just to see whether the company is meeting their milestones, where they are running to any operational issues, whether they need help, opening strategic markets, building relationships into new markets. But really active, I think at most the extent of the participation will probably be in an Advisory Board. I tend not to even want to be on the executive board itself but on a parallel Advisory Board because there are many legal implications. That's quite a hassle. So not so much. Yeah, almost never in the daily operations, but maybe strategically where they're going, just about quarterly review strategic review and just putting it against the big picture, the timeline, and the milestone to hit to get the next evaluation accretion. Yeah, that's probably how I balance my involvement across a different investing companies."*

Other reasons for the level of involvement of some interviewed investors i.e. I04, I05, I10, I11 included the affinity they feel with the founders and the geographical proximity.

4.3 The third stage of the investment process: Evaluation of the innovation and exit

4.3.1 Evaluation of innovation

Measuring innovation at the firm level has been a focal point of academic interest (Duhamel & Santi, 2012; Dziallas & Blind, 2019; Taques et al., 2021). Measuring the innovative performance of firms is seen as a tool for benchmarking their progress in producing innovations and economic growth. Scholarly research though has been focused mainly on mature and established ventures (Ng et al., 2014). However, early-stage ventures have characteristics that distinguish them from the more mature ones due to the high uncertainties around building their innovation and revenue streams. Early-stage ventures, in order to move from the stage of high uncertainty to a more stable orbit, rely a lot on subsequent rounds of external financing rather than on their own revenue stream and profits, as it would be in the case of a more mature company (Wong et al., 2009). Given the lack of strong financial record, investors largely focus their evaluation on the innovation indicators of the early-stage ventures.

The interviewed investors have shared several indicators that they expect when they evaluate an early-stage innovation on ECF. These indicators are illustrated in five categories in Table 5.

Table 5 Innovation indicators for early-stage ventures in ECF

Category	Examples	Interviewees
Intangible assets	Intellectual property (e.g. patents, trademarks, copyright) Data & analytics Know-how Integration of high-end technology	I01, I03, I06, I14, I16, I18, I20
User acceptance and adoption	Social network acceptance (e.g. followers on Facebook, Instagram, LinkedIn, twitter, discussions in forums like Reddit) Users' feedback (private or public e.g. trustpilot) Registrations/Subscriptions	01, I05, I07, I08, I11, I13, I14, I15, I16, I17, I18, I20, I21, I22
Experts' acknowledgement and approval	Specialized press National/International Awards Certifications of audits/ Regulations Industry papers Industry associations Product approvals	I01, I14, I15, I22
Impact	ESG impact Changing mindset or consumer behavior Promoting values	I05, I07, I08, I12, I13, I15, I20, I21
Strategic partnerships	Government grants Licensing agreements Advisory board Strategic clients	I01, I08, I13, I15, I16, I22

4.3.2 Exit

Exit in the context of young ventures represents an opportunity to cash out. Exit is considered the ultimate goal for the relevant stakeholders when it is crowned with success i.e. with significant gains on the initial capital. An exit may refer to the founders, the firm itself or the investors. In regards to the founders, exit is defined as the act of stepping out from the control of the venture, in a managerial and ownership level (DeTienne, 2010). For a firm, exit is about selling-off or dissolution (Decker & Mellewigt, 2007). From the investors point of view though, an exit is defined as an opportunity to cash out from an investment either in a liquidation event, such as M&A, IPO and selling-off the firm, or through a trade sale i.e. selling to other investors or through management buy-out (Collewaert, 2012).

In the context of early stage ventures that perform fundraising through ECF, investors consider IPO as the ultimate financial event and an opportunity to gain the higher returns on their investment. IPOs though for early stage ventures are rare and investors usually aim for other opportunities to cash out, such M&As or a trade sale (Cotei & Farhat, 2018; Vismara, 2018).

Exit definition

The findings of this study reveal that the type of exit the interviewed investors consider as desirable is associated mainly with the type of investment, whether it is High-Tech or Low-Tech. For High Tech investors i.e. I01, I02, I03, I05, I06, I07, I08, I09, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22, exit revolves around an IPO, an M&A, a management buy-out, a licensing agreement or a trade in the secondary market. Several investors i.e. I05, I07, I08, I11, I12, I14, I18, highlighted though that the secondary market in the domain of Equity Crowdfunding is not well-developed and often non-existent. In case there is no secondary market, investors are waiting with clenched hands until a liquidity event occurs. In

some cases though there is an available secondary market for trading equity. Some investors i.e. I05, I07, I08, I18, mentioned as examples the secondary markets by the UK platform Seedrs or the US platform Start Engine or the Chilean platform Broota. Nevertheless, these markets are newer developments and, according to the interviewed investors, are characterised by relatively low liquidity.

On the other hand, Low-Tech investors i.e. I02, I04, I20, expect an exit related to selling-off the firm. This revelation is explained by I20, who is the CTO of a green logistics company and a Professional (Angel) investor who invests both a High-Tech and Low-Tech industries:

> *"And then again, it's like a stock investment. Again, you invest in a stock, that means you're investing in that company and then you would expect over the period of time a certain amount of growth or a bigger chunk of return as an exit. So again, there are two goals to my investment. One, whether it's an exit based investment wherein, okay, I'm building this company next five years, six years, ten years, the company will come to a certain level and I exit. So that's one. The second part is what I called as a lifestyle business. It depends. If it's a lifestyle (Low-Tech) business. Sometimes you invest and you keep getting the returns as a dividend. Then you might think of an exit in those companies at any given point, just by selling off and you'll get your money back. So that's okay. But you might have enjoyed the dividend over the period of time."*

Exit timing and rationale

The results show that the expected timing of the exit again is different for High-Tech and Low-Tech investors. For High-Tech investors i.e. I01, I02, I03, I05, I06, I07, I08, I09, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22 timing varied from 1 year to 10 years with an average of 3-5 years. On the contrary, Low-Tech investors i.e. I02, I04, I20, expect an exit within 1-3 years.

In summary, the participants in this study associate their decision to exit or expand with the following reasons. The first and most popular is whether they believe that there is potential for the company for rapid growth. In that sense, they are willing to wait until a future financial event in which the valuation of their equity will sky rocket. As an example, I08 mentions a case with a company in which he invested. He even decided to buy more equity in the secondary market as he was expecting the valuation to soon increase greatly:

> *"And it's like, I will take that off your hands because after you've sat on it for seven years, but it's worth in your eyes, worth no more than it was the day you bought it seven years ago, all the time has already been put in exactly. This company is literally going to explode that very soon. Yeah, because that tends to be how it is. These companies have no a little change in their valuations for years and years on end. And then when they finally start to get traction because they actually have revenue or even profits, they explode rapidly."*

The second reason investors mention as an exit criterion is whether they feel pessimistic about the potential of the company. In such case, they might even consider a shorter investment horizon. The High-Tech investors that give a shorter timeframe i.e. I03, I08, I12, I14, I15 consider that this depends on whether they receive negative signals, usually within the first year or two. They describe three types of negative signals from the company's side. The first is related to not seeing progress in their developments or identifying poor strategic decisions in their updates that can undermine the growth potential of the company. The second is identifying dishonesty or inconsistency. The third is the lack of communicativeness about their developments, for example, poor or no updates to investors, poor or no responses to questions. Still in such cases, it remains questionable, according to the investors, whether

they can sell their equity in the secondary market. This is described well by I07, who is a long time ECF investor and has followed the ECF industry since its emergence:

"If I buy equity in a company and in a year from that time I don't hear anything and I ask and I still don't hear anything, I have very limited options on what i can do, if the platform has a secondary market, for example Seedrs has a secondary market, Broota, that platform in Chile has a secondary market, okay, and i have used it and works well . Now if something is not going well in a company and you want to sell in the secondary market it is not always easy to sell it, either because there is lack of liquidity and probably it's also the fact that if a company is not going well even if there is liquidity no one wants to buy"

Lastly, exiting an investment can be a portfolio decision. This includes cashing out because they need the capital for individual reasons or because they want to allocate the capital in another investment that is more profitable for them at this stage. This revelation is described by I17, who is a High-Tech investor and founder of an Business accelerator and incubator for EdTech:

"So like if something is growing typically you want to keep on putting money. Now you can be also in a situation where you need to take the money because you want to cash in your profit, but as long as you see, I think it also matters how much is this growth compared to other opportunities, because you don't have unlimited amount of money, you can invest if what you expect from that company is going to give you more than what you expect from another company. You'll invest in this one, but even if a company grows a lot, you may not want to invest because you have a better opportunity somewhere else, right?"

5 Discussion and conclusions

5.1 Introduction

The aim of this chapter is to present discussion and conclusions around the findings that were presented in Chapter 4. Moreover, it aims to show how the findings connect to the research questions and how they position among the existing literature.

5.2 Summary of the findings

This study aimed to approach Equity Crowdfunding as a form of Crowdsourcing by exploring two Research Questions.

RQ1: What are the perceptions of the crowd investors throughout the investment process in Equity Crowdfunding?

As explained in the Literature Review, Crowdsourcing consists of different operational stages: planning, open call, running the crowdsourcing activity and evaluating the results. In order to address the first Research Question, the author approached ECF in different "operational stages", equivalent to Crowdsourcing. Specifically, in this study ECF is approached in three stages: a) the decision to invest in an innovation, b) the investment monitoring and participation and c) the evaluation of innovation and exit.

As explained in Chapter 1, previous studies on ECF focused mainly in the first stage of the investment decision, addressing topics around the success of a crowdfunding campaign. However, the second and third stage of ECF have not been sufficiently explored. Specifically, there are only two studies that explore topics concerning what happens after a successful ECF campaign, but only from the perspective of the business venture. The first study is by Hornuf et al., (2018) and investigates the topic of the survival of ventures after

they raise funds from ECF. The second study is by Di Pietro et al., (2018) and explores the venture's views on the resources they acquire through the interaction with the crowd investors. Still, the conclusions in these studies around the investor decision-making are drawn implicitly from the venture's point of view and not directly from the investors. At the same time, no study so far has explored the third stage of ECF concerning the evaluation of innovation and exit. To the authors knowledge, this is the first study that engages with this topic.

Concerning the first stage of ECF, the findings in Chapter 4 reveal that investors base their decision to invest in an innovation in three pillars. The first pillar is revolving around the motivations to participate in ECF, primarily financial motivations, but non-financial as well. The second pillar is the investor perception of the quality of the innovation. Providing funding is a whiff that gives life to an innovation. However, no previous study explored how investors select which innovations to fund and consequently materialise. This is the first study that explores the innovation as an investment proposition. The findings reveal that the investors focus on specific aspects of innovation i.e. the taxonomy, the subjective nature of innovation, the complexity, the scalability and the market. The third pillar in the investor decision-making is the quality of the team. Results indicate team professional competences, team diversity, founders' commitment, team's character and personality and team and company climate.

In regard to the second stage of ECF, the study identifies four levels of investor involvement in ECF: complete, active, moderate and passive. The study further identifies that the degree of investor involvement is highly associated with the amount invested.

Lastly, this is the first study that explores the topic of post-investment evaluation of innovation and exit. The findings reveal major indicators that investors expect as innovation outcomes after their investment. These indicators are perceived by investors as signal of

healthy and successful growth for the young venture and potentially as a signal for subsequent investing. Last, the study identifies the rationale of ECF investors around exiting.

RQ2: What is the relationship between different types of investors and their perceptions throughout the investment process in Equity Crowdfunding?

Earlier, in the chapter of introduction, it was explained that ECF is a form of crowdsourcing because it allowed the financing of young ventures from a *big and heterogenous pool of investors*: the crowd investors. The literature review revealed that the perceptions of the crowd are under-explored. Moreover, previous studies on ECF didn't take into account the heterogeneity of investors. To the authors knowledge, this is the first study that introduces different types of investors based on the level of professional engagement in the investment industry (Professional/Retail investors), the industry orientation (High-Tech/Low-Tech investors) and the impact orientation (Regular/Impact investors). The findings reveal that the heterogeneity of investors has influence on their perceptions, particularly on aspects related to the decision to invest in an innovation and the decision to exit. This finding strengthens the initial belief that ECF can have the potential to democratise capital and provide more opportunities for funding. It also calls for future research in this domain.

The summary of the findings in relation to the type of investor are presented in Table 6. Detailed discussion follows in the next sections.

Table 6 Summary of findings

Stage	Aspect	Feature	Type of investor	Associated with
The decision to invest in an innovation	**Motivations**	Return On Investment	Invested amount High-Tech/Low-Tech Regular/Impact	Level of return Risk/reward relationship Time horizon of the return

		Impact	Impact	Impact motivation Impact consciousness
		Democratization of capital and innovation	Impact	Risk assessment Collaborative nature of value-creation Mitigation of selection biases
		Access to investment opportunities	Professional/Retail	More investment opportunities Inclusion (low ticket)
		Networking	Professional/Retail High-Tech/Low-Tech	Consultancy Co-investing Personal recognition Learning Work opportunities
		Personal Interest in business and entrepreneurship	All	Professional interest Learning Hobby
		Access to intangible assets	Invested amount	IP Strategic partnerships Clients
		Gamification element in ECF	All	Playful and compelling activity
		Supporting FFF	All	Entering ECF to support personal network
		Re-investing on gained trust	All	Providing subsequent investments to a venture that proves well
	Innovation	Definition of innovation	All	Novelty Applicability
		Taxonomy of innovation	All	Incremental Radical Disruption

		The subjective nature of innovation	All	Adoption Customer satisfaction Customer retention Strategic advantages
		Complexity	All	Implementation complexity Applicability complexity
		Scalability	All	Diversification of revenue streams Diversification of products Diversification of geographical markets
		Market	All	Market size Market concentration Market growth Market regulation Sociopolitical character of the market
	Team	Team professional competences	All	Relevant professional and industrial experience Educational background Operational capability Prior entrepreneurial experience
		Team diversity	Regular/Impact	Demographic (gender, color, race, culture) Educational background Professional expertise
		Founders' commitment	All	Financial commitment Non-financial commitment

		Team's character and personality	Professional/Retail	Integrity Humbleness Receptivity Sensibility Grit Communicativeness
		Team and company climate	Professional/Retail	Strong founding team dynamics Company working conditions
Investment monitoring and participation	**Degree of involvement**	Strategy Innovation development Business development Market development Fundraising Sales	Invested amount	Complete Active Moderate Passive
Evaluation of the innovation and exit	**Evaluation of innovation**	Innovation indicators	All	Intangible assets User acceptance and adoption Experts' acknowledgement and approval Impact Strategic partnerships
	Exit	Type of exit	High-Tech/Low-Tech	IPO M&A Management buy-out Licensing agreement Trade in the secondary market Dividends Selling-off the firm
		Timing of exit	High-Tech/Low-Tech	Duration of investment horizon Earlier exit Portfolio decision

5.3 Investors' perceptions on the first stage of the investment process: the decision to invest in an innovation

5.3.1 Motivations

At the macroscopic level, the findings reveal that the crowd investors in ECF are motivated by the financial return on investment, the impact of an innovation, their desire to support the democratisation of capital and innovation, the access to investment opportunities, networking, their personal interest in entrepreneurship, access to intangible assets, the gamification element, supporting FFF and reinvesting on gained trust.

As discussed in Chapter 2, ECF is a form of crowdsourcing that also borrows elements from microfinance. Investors enter the ecosystem to invest in innovative ventures. Therefore, it is expected to find that financial motivation is a major reason crowd investors invest in an innovation in ECF; an expectation that the findings of this study confirm. However, it was uncertain whether other types of motivations would appear in the findings of this study. The literature involving motivations to participate in crowdsourcing projects are presented in detail in Chapter 2. The categories of these motivations are financial, career-related, individual, social, altruistic and task-related. It is very interesting to observe that the general categories of motivations for crowdsourcing align with the motivations for ECF identified in this study. Although financial motivations are the primary ones in ECF, findings shows that Equity Crowdfunding is not only about "business". It confirms as well that, although ECF is strongly financially oriented, it still keeps the foundational elements of crowdsourcing.

Table 7 Comparing findings from literature review and from the empirical study

Categories of motivations in crowdsourcing	Identified motivations in Equity Crowdfunding
Financial compensation	Financial return on investment
	Access to intangible assets
Altruistic	Democratisation of capital and innovation
	Impact of an innovation
Social & Career-related	Networking
	Supporting FFF
	Access to investment opportunities
Individual	Gamification element
	Personal interest in entrepreneurship
Task-related	Reinvesting on gained trust

The affinity among other forms of Crowdsourcing and ECF is prominent, for example, in the level of altruistic motivations. Altruistic motivations in crowdsourcing, as explained in Chapter 2, is a sense of higher purpose for the crowd, such as improving society or supporting egalitarian initiatives (Aitamurto, 2015; Cappa, Oriani, et al., 2019). The findings of this study reveal that altruistic motivations are present in the context of ECF as well. Drawing on Chapter 4, it is observed that some investors consider ECF a disruptive and egalitarian financial instrument (democratisation of capital). They find ECF as a platform that can increase accessibility through the mitigation of risk and selection biases. The mitigation of risk revolves around the low opportunity cost that is associated with crowd-investors

entering the investment market with a low ticket. A high campaign amount can be accumulated from many small amounts by a big investor pool. Ventures without a collateral and financial track record can theoretically more easily attract the leap of faith by an investor if it is for a smaller investment. The selection biases are relevant to the industry of the innovation, the location and features of a demographic nature. The literature findings concerning the opportunity to mitigate selection biases in ECF are however contradictory. On the positive side and in regard to industry biases, there is evidence that ECF has potential. As stressed by (Stevenson et al., 2019), most of the VC funding in the USA is in High-Tech ventures that are considered high-growth and high-return. The same authors find that US crowd investors allocate much more funding towards Low-Tech ventures, such as retail, consumer products, food and beverages. Concerning the location bias, as explained in Chapter 2, there is indeed evidence that is mitigated on ECF. For example, D. Cumming et al. (2021) find that investors do support remote ventures that have high chances of successfully raising funds over ECF. In contrast, they find that ECF doesn't mitigate the gender and minority bias. There are similar findings by (Malaga et al., 2018), who note that female entrepreneurs are underrepresented and not preferred by investors. These results are not surprising and are also supported by the demographic characteristics of the sample in this study. As indicated in Chapter 4, 21 from the 22 interviewed investors are male. Despite the author of this thesis being female and maybe would be easier to approach other females, identifying female investors has been a really challenging task. This is because, according to the statistics, the investment industry is male-dominated industry. Only the 5.7% of the VC partners are female and only the 17% of VC funds is allocated to ventures with at least one female founder [27] [28]. The gender bias might be based on the effect of homophily, according to

[27] https://www.forbes.com/sites/soulaimagourani/2021/12/28/these-investors-want-more-women-to-become-vcs/?sh=3a4942b55de1

[28] https://www.calcalistech.com/ctech/articles/0,7340,L-3799491,00.html

which individuals are inclined to choose individuals who are similar to them (J. Greenberg & Mollick, 2015). Kleinert & Mochkabadi, (2021) though giving an explanation based on gender stereotypes, find that female founders in ECF are less likely to be funded when they carry characteristics that are traditionally considered "masculine". Specifically, they find that among female entrepreneurs, the female founders who have more managerial experience are less likely to be selected from crowd investors compared to females who are less experienced. These literature findings might also explain the fact that the democratization of capital as a motivation has been supported mainly by impact investors in this study. Impact investors might be more conscious regarding equality and egalitarianism, and thus be more inclined to make conscious decisions in this direction. Furthermore, given that the studies mentioned previously do not disclose the cultural background of the investors, cultural aspects might also affect the results.

This study has identified that cultural background can indeed influence the decision of investors to invest in an innovation in ECF. This finding is related to the investors' attitude towards risk. Findings reveal that the interviewed investors from East and South Asia seem to be more risk-averse when it comes to investing in early-stage start-ups. This risk-aversion is expressed as an attitude to invest in later stages of the start-up development, such as exactly before revenue or most likely post-revenue. There is not vast literature covering the influence of the cultural background in the investment decisions relating to venture capital and innovations. But the results of this study align with few works that touched this topic (Dreger et al., 2017; Huang et al., 2015). For example, Huang et al. (2015) explore the case of venture capital syndicates in China. They find that when Chinese investors participate in venture capital syndicates with foreign firms, they tend to enter in later rounds of investments. This risk-aversion behavior might be related to cultural underpinnings, such as the process investors build trust and deal with failure or the dynamics of decision-making in more

hierarchical societies (Taplin, 2005). The conditions under which this tendency is expressed needs to be studied further.

As stressed in Chapter 2, the social aspect, that is prominent in other forms of crowdsourcing, such as journalism and collective design, is connected with peer support and learning (Aitamurto, 2015; Hajiamiri & Korku, 2015). In the findings of this study, two of the social reasons the interviewed investors participate in ECF can also be explained similarly. In Chapter 4, it was explained that less experienced investors try to build connections with entrepreneurs aiming to help the ventures, learn and potentially take an official role in the venture that will elevate their career as investors. Networking with entrepreneurs and investors and getting access to investment opportunities is indeed a form of support and learning in the investment community. As illustrated in the study by (Politis & Landström, 2002), the cycle of investors' career growth has three distinct stages: the corporate, the entrepreneurial and the integrated investment stage. In the corporate stage, investors pursue a form of managerial learning through collaborative platforms and workplaces, in which they build networks and influence. In the entrepreneurial stage, they leverage the created network to engage in consultancy or advisory roles to learn more about the entrepreneurial process. Lastly, in the third stage, they integrate the managerial and the entrepreneurial knowledge they acquired in order to add value to their investments. This three-stage process clearly explains how networking and access to investment opportunities is part of the investors process of maturing. It explains as well the profile of the investors. As described in Chapter 4, all the investors have managerial experience and the majority of them have both managerial and entrepreneurial experience. This indicates that regardless of their current maturity level and whether they ever reach the third learning stage, they are all in a process of investor learning.

Regarding the category of individual motivations, as described in Chapter 2, the crowd is motivated to participate in crowdsourcing by personal interest and because they find the project stimulating or fun. The results of this study indicate that this is relevant as well in the context of ECF. Investors' disposition towards ECF by personal interest activity is explained by their entrepreneurial background, as presented in 4.1. Moreover, the interviewed investors stressed that they are stimulated by the gamification element in ECF. The process of browsing the ECF listings, searching for information to make evaluations, checking the progress of the ventures and ascertaining whether they made a successful choice, brings them satisfaction. The relationship between the investment experience and the investors' psychology is an under-researched area. Investor psychology has been mainly studied in relationship to their investment decision and how it affects the volatility of the markets (Deshmukh & Joseph, 2016). There is only one conceptual study by Konana & Balasubramanian, (2005) regarding the digital investment experience. The authors support that any kind of digital investment experience can provide hedonic gains to the investors, associated with the social and psychological aspects. They support that investors gain satisfaction by positioning themselves in a community or a social class and by the illusion of knowledge and control over their investments. The digital investment experience in ECF, as described above, shares characteristics with other types of digital investing, such as broker platforms. Thus, future studies can utilize this framework to further investigate the relationship between the investment experience and investor satisfaction.

Impact

The impact of innovations nowadays has been more relevant than ever. Impact investing is trending as a new norm in which capital gains and higher good are not non-inclusive (Bugg-Levine & Emerson, 2011; Quinn & Munir, 2017). The literature on Impact Investing (II) is still in its infancy and the terminology and conceptualization is not standard. Impact

Investing can be confused with Socially Responsible Investing (SRI) or Venture Philanthropy (VP) (Agrawal & Hockerts, 2021). From the perspective of innovation outcome, the themes around these three categories can be overlapping. One distinctive difference among them lies in the expectation for return. In Impact Investing and Socially Responsible Investing, the expectation for return on investment is prominent. Venture Philanthropy, as the name suggests, is more donation-oriented. Impact investors though are not donors; they are individuals who aim to combine financial with social returns (Roundy et al., 2017). In that sense, when an investor is only interest in the return or only interested in impact, is not considered impact investor (Roundy et al., 2017).

Based on this foundation, the interviewed investors in this study are characterized either as *regular* or *impact investors.* This categorization is derived from the nature of the innovations they invest in. Regular investors are not motivated by the impact of an innovation, while impact investors are. The results concerning impact investors are very interesting. In this study, as stressed in Chapter 4, two types of investors are identified: *impact-conscious* and *impact-motivated investors*. Impact-conscious investors are investors who engage systematically in impact investing, either exclusively or by consciously allocating a fraction of their investment capital for impact innovations. This means that at least a significant fraction of their investment portfolio, if not 100%, consists of impact investments. On the other hand, impact-motivated investors engage in impact investing only occasionally. As stressed in the findings section, the main distinctive difference among these newly identified types of investors is found to be their expectation on returns. Impact-conscious investors are willing to compromise on the level of return, while impact-motivated investors are not. These results are complementary with the results by Hornuf et al. (2021), who compare the behavior among regular and sustainability-oriented investors. They find that sustainability-oriented investors invest larger amounts of capital in a higher number of sustainability-oriented

innovations. At the same time, they study the impact a portfolio default has for regular and sustainability-oriented investors. They find that when sustainability-oriented investors experience default of a company in which they invested, they tend to invest in fewer companies within the following period. This implies that sustainability-investors are still return-oriented and they don't perceive their investment as a form of donation, as supported in our findings as well.

Return on investment

The indings of this study suggest that the primary reason to invest in an innovation in ECF among all types of investors is the financial return on investment. Past literature findings on this topic showed contradictory evidence. In the context of ECF, there have been few studies that explore the motivations of investors who invest in an innovation and many of them from a very limited scope. For example, the study by (Moysidou & Spaeth, 2016) explores two types of motivations, cognitive and affective, in order to understand what is most important among investors in the three types of crowdfunding, ECF, reward-based and debt-based crowdfunding. Their findings are in agreement with the findings of this study. They find that investors in ECF are driven by cognitive motivations revolving around financial returns and information regarding their evaluation. (Daskalakis & Yue, 2017) compare ECF and debt-based crowdfunding exclusively regarding financial incentive and risk. They show that the financial return for ECF investors is not considered significant. Their research though has a hypothetical character, as it is not based on actual ECF investors but on individuals from the general population and individuals whose profile is potentially similar to an ECF investor. Thus, the result can be considered controversial. (Wasiuzzaman et al., 2021) find that the financial motivations are not significant, but their research is limited in the context of Malaysian ECF market. They stress that the Malaysian private equity market and particularly

the ECF market is quite unique and this finding is mostly relevant in the particular context. Experienced Malaysian investors are not very risk-oriented and the majority of the ECF investors in Malaysia are millennials who are less experienced and more prone to support a new or good cause rather than gain financial returns (Wasiuzzaman et al., 2021). These findings indicate that the motivation for financial return can be related to the maturity of the ECF market and the degree to which professional investors participate in. The sample of this study was global and the interviewed investors participate in well-established platforms, so it is expected to find a strong appetite for financial return.

Findings of this study around the financial return show differences among High-Tech and Low-Tech investors. High-Tech investors seem to have higher investment horizon, expect higher returns and aim in an exit through M&A or IPO. On the contrary, Low-Tech investors are shorter-term investors, expect lower returns or dividends and aim in a selling off.

There is no study on this topic in the context of ECF and in general research on Low-Tech investing is very limited. Low-Tech ventures might not be a popular research theme around investment behaviour, as Venture Capital invest mainly in High-Tech that the consider high growth companies. For example, between 1995 and 2016, VCs invested 83% of their total capital in High-Tech ventures and only the 3% in Low-Tech ventures, like Retail, Consumer products etch (Stevenson et al., 2019). As mentioned previously though in this Chapter, ECF changes this landscape. Moreover, Low-Tech ventures are as well considered the backbone of the economy and can still be innovative.

The differences regarding risk perception among High-Tech and Low-Tech investors is routed in a long-standing bias according to which High-Tech ventures are considered more risky (Lockett et al., 2002; Murray & Lott, 1995). This bias might be explained by the fact that High-Tech ventures require highly skilled labour, more intensive R&D activities and capital channelled in this area (Jungwirth & Moog, 2004). On the contrary, Low-Tech are

considered less complex in the stages of innovation implantation and diffusion (Jungwirth & Moog, 2004). Production and marketability are perceived by investors not so challenging thus easier to bring back returns.

5.3.2 Innovation

In Chapter 4, it was shown that the interviewed investors consider innovation as an integral part of their investment decision. Moreover, it was revealed how they perceive innovation and what are the important characteristics in their eyes when making their investment decision.

In the academic literature, innovation is conceptualised mainly from three perspectives (Quintane et al., 2011). The one perspective approaches innovation as a process with certain stages, the number of which varies depending on each definition. A stream of scholars include mainly the stages of idea generation and idea development (Axtell et al., 2000; Clark & Guy, 1998), while others incorporate a third, final stage that is the diffusion of innovation (Kanter, 1988; Rogers, 1983; Tidd et al., 2001). The second conceptualisation of innovation is the innovation as an outcome. In this cluster of definitions, innovation is a product, service or method that is characterised by novelty and usefulness (Kahn, 2018). According to this view, novelty and usefulness are defined by the perception of the users of the innovation in a specific context (Damanpour, 1991). Last, the third perspective on the conceptualisation of innovation is the knowledge-based perspective, in which the innovation process is approached as a knowledge-creation process and the innovation outcome as a knowledge outcome (Quintane et al., 2011).

The perception of innovation among the interviewed investors tilts towards the second aforementioned definition by (Kahn, 2018), i.e. innovation as an outcome. Investors

described innovation as a novel product, service or method, that is bound to the positive value it provides first to the customers.

According to investors, the value of an innovation is based on two characteristics: novelty and applicability. They perceive novelty as the improvement or differentiation from a past product, process or method. In academic literature, novelty has been given various definitions, such as originality, uniqueness, and differentiation from a current practice (Amabile, 1997; Oldham & Cummings, 1996; O'Quin & Besemer, 2006; McCarthy et al., 2018). The investors' perception on novelty seems to align with the third conceptualization of the differentiation from current practices.

Moreover, investors highlight that they perceive applicability essential characteristic of innovation. In that sence, an innovation needs to be able to be applied in a relevant and appropriate way in order to satisfy a specific user need. This is in line with the view on applicability by (Grant & Berry, 2011): applicability is "the ability of innovation to address problems or needs". The same authors suggest that applicability gives to the innovation a high degree of usefulness, that can motivate users to adopt it.

Another characteristic considered important by the investors is the degree of complexity. Investors believe that an innovation that is complex to implement or to be applied has lower chances to be adopted.

All the above three characteristics are part of the Roger's innovation diffusion theory (Rogers, 2003). Rogers suggest that in order to achieve an effective diffusion of innovation, innovation needs to have five attributes: a) relative advantage b) compatibility, c) complexity, d) trialability and e) observability. According to this theory, relative advantage is the degree to which an innovation offers superior value compared to its precedent; compatibility is the degree the innovation satisfies in an appropriate way the needs of its users; complexity is the degree an innovation is perceived hard to understand and use; trialability, as the opportunity

to experiment with the innovation before the full adoption; and observability as the degree to which the value of an innovation is observable from its users.

The definitions of novelty and applicability are very close to the definitions of Rogers about the relative advantage and the compatibility, while the complexity is identical. Trialability, although initially not found as a distinct characteristic given by the investors, it can still be associated with the findings around innovation. Investors supported that the value of an innovation can be valid only if it is demonstrated by its own users. Investors though are willing to compromise on indicators of demonstrated value when it comes to radical innovations. Radical innovations are considered as harder to implement and adopt. Investors suggest that in this case, sales, user satisfaction and customer retention can be largely supplemented by other strategic advantages, such as strategic partnerships that will allow for testing and initial future adoption. Strategic partnerships can offer exactly what Rogers described as trialability: the opportunity to experiment, improve and adopt.

An important finding of this study is the scalability as a characteristic of the innovation. The interviewed investors perceive scalability as the ability of an innovation to gain bigger market share from a primary developed innovation. According to findings, this can be achieved in multiple ways, such as the diversification of an innovation into multiple products, diversification into different revenue streams and diversification in different geographical markets. Scalability hasn't been studied much in the innovation literature (Stampfl et al., 2013). Only few studies have employed scalability as an innovation characteristic. For example, in the setting of education, scalability has been defined as an innovation that can be adapted efficiently in different settings (Clarke & Dede, 2009). In the context of social innovation, scalability is considered when an innovation is being diffused at a larger scale and the social impact is maximised (Bolzan et al., 2019). According to (Stampfl et al., 2013), scalability refers to the potential of a business model to increase the revenues in a higher pace than the cost base.

5.3.3 Team

Findings reveal that the interviewed investors include team as the most important criterion to invest in an innovation. Specifically, as described in Chapter 4, investors prefer ventures that consist of highly skilled professionals with experience relevant to the domain of innovation, diversity in skills, financial and non-financial commitment, trustworthiness and good team and company climate. Research on investment criteria in ECF so far has been mostly quantitative around analysing the successfully funded ECF projects. The quantitative nature of these study doesn't allow to identify many of those aspects and details around them. For example, (Lukkarinen et al., 2019) finds that team is criterion is important but doesn't provide details on team characteristics. Then, (Vismara, 2018) utilises the project information listed on the campaign website and the social networks of founders. He identifies that the number of team members in a project and the social capital of founders is associated with successfully funded projects. Last, (Hsu, 2007) shows that firms with highly-educated team (such as PhD degree) and extensive professional experience are preferred by Venture Capitalists. Still, criteria as team diversity, trustworthiness and team and company climate have not been studied.

Team diversity is found by most studies to be related to the innovation performance of the ventures (Kristinsson et al., 2016; Talke et al., 2010, 2011). In alignment with the findings of this study, (Talke et al., 2011) defines team diversity in relationship with the industrial and educational background. As described in Chapter 2 (Terjesen & Patel, 2017), diversity in those domains can facilitate the breadth of knowledge needed in all stages of the innovation process. For example, education diversity might be very influential in the stages of idea generation and implementation, in which team can see the subject from different lenses.

While professional diversity might help with the diffusion by identifying different channels and networks to market the innovation.

Results indicate that team climate is found an important criterion particularly for High-Tech Investors. The influence of team climate in investment decisions or in the performance of ventures is an under researched area as well. There is only one study that they compare the relationship between team climate and innovation performance between research oriented and development oriented teams (Bain et al., 2001). They find that research-oriented teams, that focus on creating new knowledge, work more closely together. This implies that team climate can be important as well for early-stage ventures that develop their own innovations.

5.4 Investors' perceptions on the third stage of the investment process: Evaluation of the innovation and exit

To the author's knowledge, this is the first study that attempts to take into account the perspectives of the crowd regarding the evaluation of a crowdsourcing project outcome. Moreover, in the context of Equity Crowdfunding, it is the first study that attempts to understand the perspectives of investors in the post-investment stage. Last, it is the first study that explores how investors evaluate innovation in early-stage ventures, as the ones that raise funds through ECF.

Findings from the literature review (Chapter 2) show that the post-crowdsourcing stage is underexplored, especially from the perspective of the crowd. Scholarly research has primarily focused on the benefits organisations have from a crowdsourcing activity, such as innovation, financial and market-related benefits (Agrawal et al., 2015; Cappa, Oriani, et al., 2019; Di Pietro et al., 2018; Lehner, 2013; Stanko & Henard, 2017; Walthoff-Borm et al., 2018). But hasn't explored the views, expectations and evaluation perspectives of the crowd regarding

the crowdsourcing outcome. In the context of crowdsourcing skills, such an exploration would answer questions related to how to attract subsequent participations or how to improve the performance of crowdsourcing projects. In the context of Crowdfunding, and particularly, Equity Crowdfunding, understanding the crowd perceptions on the crowdfunding outcome is very significant, as it plays a critical role in their decision to exit, maintain their investment or expand it in a subsequent fundraising round.

5.4.1 Innovation evaluation

Findings reveal that investors in the post-investment stage are concerned about both the innovation and financial performance of the ventures. Financial performance is an expected concern as it will provide to investors financial gains. However, findings reveal a strong emphasis on the evaluation of the venture's innovation as well. This implies that they believe that innovation and financial performance in young ventures go hand in hand.

Innovation is the engine of the early-stage ventures that can drive them to a promising future. Without innovation, early-stage ventures cannot survive. Developing and commercialising an innovation is their key competitive advantage to gain market share and start creating revenues and profits (Stoneman & Kwon, 1996). Early-stage ventures have some unique characteristics. They have limited financial and non-financial resources and they are still in the process of developing their innovation. The formation of an early-stage venture implies that the venture has already fulfilled the stage of idea generation and selection and is engaging with the stages of idea development and diffusion (Scholz, 2015). In those stages, there is high uncertainty regarding the feasibility of the innovation, the acceptance and adoption, the positioning in the competition and any related regulatory compliance (Tidd et al., 2001).

The findings of this study regarding how investors evaluate the innovation of young entrepreneurial ventures show that their indicators are directly connected with the last two stages of innovation development i.e. implementation and diffusion. This implies that investors want to make sure that the innovation process will be completed successfully by delivering a functional innovation that can position itself in the competition and gain wide market acceptance and adoption. In this direction, each of the identified innovation indicators is discussed below.

Intangible assets

Investors viewed intangible assets as a dimension in the evaluation of innovation and as a form of collateral regarding their investment. Results reveal that the interest of the interviewed investors on intangible assets revolved around intellectual property and data. Intellectual property has been used extensively as an indicator of innovation by scholars and industry for all types of ventures, young and mature. Intellectual property refers to patents, trademarks, copyright etch. It is considered as a form of recognition and as a competitive advantage, since it ensures exclusive rights for the commercialisation of innovation. On the other hand, data & analytics, such as user metrics and behavioural data, is a very new type of intangible asset. In 2006 Clive Humby, who is a Mathematician and in charge of developing the loyalty membership of one of the biggest supermarket chains in the world (Tesco), expressed the famous phrase that "Data is the new oil"[29], meaning that they will define the financial and power dynamics of the world in a similar way as oil did in the past. In 2011 the World Economic Forum (WEF)[30] predicted that Data will become a new asset class. However, the discussion to formalise and establish Data as an intangible asset has fired up only recently. The Organisation for Economic Co-operation and Development (OECD)

[29] https://en.wikipedia.org/wiki/Clive_Humby

[30] https://www.weforum.org/reports/personal-data-emergence-new-asset-class

included Data as an intangible asset only in 2019[31]. Accounting associations and enterprises around the world, such as the Chartered Accountants of Singapore (ACUTUS)[32] and Gartner[33], are scientifically justifying and strongly support the need to officially include Data as an intangible asset and advance the related methodologies around their evaluation. In practice, as confirmed by the only scholarly study on the topic by (Birch et al., 2021), even Big Tech companies do not seem to include Data & Analytics in their balance sheet, but data are already recognised in the investment industry as a form of intangible asset. Findings of Chapter 4 have revealed that investors have a strategic perspective on data. They see them as an asset that can increase the value of the company in financial events such as M&As, thus provide them with higher return on their equity. Moreover, they see it as a form of collateral in case the venture doesn't succeed. For example, I16, described a case of an venture called Citymapper [34] that was raising funds through ECF. The innovation of this venture had high market acceptance globally, but he knew from the news that it was facing serious issues around financial and business management and their revenue growth model. Although this information was a red flag in his investment decision, he admitted that he might had not objected an investment because of the value this venture holds. He explained that even in case of failure, the venture would be still "sellable" due to the value of their Data.

Product approvals

Product approvals imply that an innovation is functional, safe and follows the standards of the industry (Pahnke et al., 2015). In many countries, product approvals might be mandatory for the commercialisation of certain types of innovations, for example medical devices. Each

[31] https://www.oecd.org/sti/inno/46349020.pdf

[32] https://www.acutus-ca.com/2019/07/31/should-data-be-recognised-as-an-asset-on-the-balance-sheet/

[33] https://blogs.gartner.com/andrew_white/2020/03/06/the-value-of-data/

[34] https://www.wired.co.uk/article/how-save-citymapper

country has its own, different requirements though, and needs approval by its own organization. Without a product approval, many innovations cannot enter the market of a specific country. Furthermore, the more approvals a product has for different countries, the more markets it can enter. Therefore, product approvals are critical for the commercialisation of innovation and the revenue growth of the venture.

Regulation of services and platforms

Similarly, complying with relevant regulations is directly connected with the diffusion of innovation as well. Regulation compliance can be critical for commercialising an innovation, as in certain cases it is mandatory. On one hand, getting regulated can be expensive, as it can require externa audits that can be a financial burden for younger ventures. On the other hand, the speed of innovation though doesn't go in hand with the speed of regulation. One example is the emerging industry of FinTech and particularly Cryptocurrencies Trading. Cryptocurrencies trading, although existed since 2009, it hadn't been regulated anywhere in the world until a few years ago. Nowadays, only a few countries have developed regulations and still in the progress of continuous update[35]. Young FinTech ventures, in the face of uncertainty regarding the regulatory landscape, might find it hard to get regulated or proceed to sales as a non-regulated entity. In this context, finding alternative channels to prove their regulatory capability, such as the "regulatory sandbox", helps these ventures to overcome regulatory uncertainty and expand their customer base [36]. There are other cases, particularly in emerging industries, that the regulations might be blurry or not mandating an audit and certification for compliance. Nevertheless, even in such a case, an attitude to comply or a proof or certificate of compliance is a signal of trustworthiness for the innovation and the venture. Thus, the young ventures and its investors might still seek walk this path. This was

[35] https://complyadvantage.com/insights/cryptocurrency-regulations-around-world/

[36] https://www.bbva.com/en/participated-regulatory-sandbox/

stressed by I22 when describing his investment in a FinTech innovation in Hong Kong (digital invoice trading platform). Under the Hong Kong's Securities and Futures Commission (SFC), the venture didn't have to be regulated in order to function, but, instead, both venture and investors made an effort in this direction and eventually their platform became SFC regulated. Investor I22 explained that this led to very significant subsequent benefits around the investors and the customers. Current and potential investors felt more trust towards the reliability of the platform and more confidence about its market expansion. Additionally, it simplified their due diligence process, as they could rely a lot on the results from the external regulatory audits. Moreover, getting regulation from SFC enhanced the acceptance and adoption of their innovation. Previously, digital invoice trading could be seen as a niche service, but being regulated, made it seen more mainstream in the eyes of the market.

Experts' Acknowledgement

The findings of this study show that acknowledgement and recognition by domain experts is an important criterion of investors when they evaluate an innovation. The indicators investors suggested include specialized press references, national/international awards, industry papers and membership or support by industry associations. An explanation for this investors' criterion is that domain experts are seen as opinion leaders. Opinion leaders, as defined by (Sakari Makkonen & J. Johnston, 2014) as individuals that are knowledgeable on a particular topic and are able with their point of view to affect other individuals 'mindset or behaviour. Although hasn't been studied in the context of ECF, past literature indicates that opinion leaders contribute to the stage of innovation adoption and diffusion, as they have the ability to convince the market that the innovation is of high quality and value (Valente & Davis, 1999; van Eck et al., 2011; Venkatraman, 1989).

Strategic partnerships

Findings of this study show that strategic partnerships are seen by the interviewed investors as an indicator to evaluate innovation. Strategic partnerships in the results of this study include government grants, licensing agreements, advisory board, strategic clients. The explanation of this selection by the investors can be routed on the implications a strategic partnership can have on learning and the innovation process of a venture. In general, the positive relationship between the strategic partnerships of firms and innovation performance has been highlighted by several studies (Callahan et al., 2013; Y.-S. Chen et al., 2009; Hui et al., 2015). Ventures with high absorptive capacity are able to capture knowledge from their strategic partners and integrate them in their innovation processes (Cetindamar & Ulusoy, 2008; Ferraris et al., 2019). Furthermore, strategic partnerships are as well a form of experts' validation or opinion leader. Last, it can contribute to increase their sales network and enhance the effects on the commercialisation of innovation.

5.4.2 Exit

Findings of this study regarding the views of investors about the exit lead us to important implications and conclusions. First, the type of the exit investors expect is bound to the industry the innovation belongs to. Second, investors consider the existence of a secondary market as an important dimension in their investments and utilize it when this option is available. Third, the timing of their exit decision is associated with a) the industry of the innovation, whether it is High Tech or Low Tech, b) the market speculation in relationship with the company growth, c) their ongoing evaluation of the venture and d) the management of their portfolio.

The process of exit from an investment hasn't been discussed much in the relevant literature and particularly in the literature on ECF and this is as well one of the contributions of this study (G. K. C. Ahlers et al., 2015; DeTienne, 2010; Pisoni & Onetti, 2018). There are only two studies that touch the topic of exit in the context of ECF and still not from the side of the investors. (G. K. C. Ahlers et al., 2015) and (Vismara, 2018), who study what elements of a campaign lead to a successful fundraising, examined the role of the venture's exit plan in the success of an ECF campaign. However, they don't find any relevant effect. Authors point out that the quantitative nature of their study, which was limited to the ECF platform's data, didn't allow for safe results regarding the views of investors. Furthermore, an exit statement for early-stage ventures, as they also admit, might be a non-realistic projection. This might be the reason that most of the fundraising ventures do not disclose such an information in their campaign (Beaulieu et al., 2015; Vismara, 2018). It is worth noting as well that the findings of this study regarding the motivations of investors to invest in an innovation do not include a specific exit time horizon. While discussing with interviewed investors about their decision-making in different stages of the investment cycle, the exit became a topic only when they were asked about the final stage of evaluation. This implies that investors, although they expect an exit, might not be so focused on its timing when they initially make an investment, especially concerning early-stage ventures.

Findings of this study show that the investment horizon for High Tech investors is longer and is associated with their view on the growth trajectory of the venture. Specifically, the interviewed investors delay their exit decision if the peak of the venture's growth is still ahead. There are possible explanations about that. High-Tech industries are characterised as innovation-intensive industries (Hogan et al., 2017). Literature findings in traditional private equity/venture capital markets show that young ventures with higher innovation activity, higher assets, higher number of employees are more likely to achieve high growth and a

successful exit outcome, such as an M&A (Cotei & Farhat, 2018). On the other hand, Low-Tech innovations focus more on acquiring product innovations from external sources and rekindling them in a new context or by focusing on the side of process innovation (Zouaghi et al., 2018). Therefore, the capitalization of innovation might offer higher margins for High-Tech ventures. This implies that investors who focus on High-Tech investments and possess domain knowledge and experience might be able to receive this innovation signals and form their exit expectations accordingly.

Findings of this study show that the existence of a secondary market for ECF funded ventures is considered important by the ECF investors. As stressed in the findings section, the interviewed investors find these markets illiquid but they are still able to trade equity occasionally and they hope in future developments in this area. The concept of an online secondary market in ECF is indeed a disruptive advancement, as traditionally it is considered highly illiquid (Lukkarinen et al., 2019). Even in traditional private equity, the secondary markets appeared only in 2001 and only recently became more popular by showing an exponential growth in the number of transactions (Nadauld et al., 2019). The case in the secondary markets of ECF is different, because they are still underdeveloped. The first secondary market in ECF was created by platform Seedrs only in 2017, followed by StartEngine and Crowdcube in 2020. It was welcomed as a feature that will attract more investors in the ECF markets. So far, there is only one study about the secondary markets of ECF by (Lukkarinen & Schwienbacher, 2020). It showed that the intention of a fundraising venture to list in the secondary market after their fundraising campaign ends, has attracted a higher number of investors/ This is in line with the results of this study that indicate the importance a secondary market has for the interviewed ECF investors.

Findings of this study regarding the association of investor's exit with their ongoing assessment are aligned with past literature findings. (Carpentier & Suret, 2015) find that

Angel Group Members already invested in a venture, might decide an earlier exit if they evaluate that the entrepreneurs are inexperienced. (Collewaert, 2012) show that investors in early-stage ventures might decide an earlier exit if there are relationship, task and goal conflicts. This is aligned with the results from the interview investors that highlighted barriers related to communication, financial and non-financial management and strategy. Investors lose their trust in the venture and want to exit with no or minimum possible losses in order to use their capital in another investment with higher potential.

6 Limitations and future research

This study has explored the research connection between Crowdsourcing and Equity Crowdfunding. In this context, main themes around crowdsourcing and Equity crowdfunding were illustrated. Further to the contributions, there are also some limitations and certain research gaps that scholars may find useful to explore in the future.

The first limitation is related to the qualitative nature of the empirical study. This study has approached Equity Crowdfunding as a form of crowdsourcing and identified aspects of investors' perceptions in the three stages, the decision to invest in an innovation, the monitoring and participation and the evaluation of innovation and exit. The qualitative nature of the study though has exploratory character. Therefore, future studies can benefit by the directions identified in each of the stages and conduct larger scale, quantitative studies across platforms and geographies for a more convenient generalization of results. For example, a major theme identified is the relationship between the phenomenon of Equity Crowdfunding and the heterogeneity of crowd. This study identified a relationship between the motivations of investors, the innovation intensity of a firm (Low-Tech/High-Tech) and the impact of an innovation. Future quantitative research can employ platform data to explore further those relationships. Moreover, future research can explore different aspects of the heterogeneity of the crowd as well.

The second limitation is related to the sampling of the interviewees in the empirical study. Although the initial target was to include investors from all the five continents, this wasn't proved possible. The study included investors from Asia, Europe, North and South America, but it wasn't possible to find investors from Africa and Oceania. This can be explained by the probability of low numbers. On the one hand, Equity Crowdfunding in Africa is a more recent advancement, as it appeared only in 2016 (Chao et al., 2020). Therefore, there might

not be such a high number of ECF investors in this continent yet. At the same time, Oceania has a total population of less than 50 million, thus the possibility of finding an ECF investor from the specific continent is smaller than the rest. Another reason for failing to find participants from these two continents might be related to the authors personal networks. The author has bigger network in Asia, Europe and North/South America, rather than Africa and Oceania. Hence, the word of mouth and the social media recommendations were less likely to reach those geographies. Future research can be employed to explore the areas of the study in these two continents.

The third limitation of this study is related to the scarcity of time and space of the author and the interviewees of the empirical study. The author had to deliver a thesis within a timeframe. On the other hand, the interviewees are busy investors that are hard to find and get committed for an interview. This study could have covered more aspects if there were no such constraints. For example, the study didn't cover many details on the content of investor contributions within the stage of monitoring and participation. Future studies can explore more this aspect of this stage.

Further to the empirical part, this study included a literature review through which important research gaps were identified revolving around crowdsourcing.

Crowdsourcing is found to contribute to organizational innovation and new product development, but the reflection of this contribution in organizational performance has not been measured in large scale. Engaging in crowdsourcing skills within a crowdfunding campaign is found to boost the orientation of the entrepreneurs towards radical innovation (Decker & Mellewigt, 2007). Prior literature illustrates a strong connection between innovation activities, organizational learning and organizational performance (García-Morales et al., 2012; Kuo, 2011; Migdadi, 2019), as engaging in innovation activities requires organizational skills; an organization in order to achieve innovation outcomes needs

to cultivate these competences which are going to remain as a knowledge in the company and help them to increase their future competitive advantage. This might indicate that firms that engage in crowdsourcing might be perform better in the long run. On the other hand, when it comes specifically to products, there is evidence that crowdsourced products show higher sales because of increases in perceived reliability and usability (Allen et al., 2018). But more research is needed to shed light on these aspects especially by reaching out to broader samples, as for example the work by (Allen et al., 2018) is focused only to one company, and by extending the research in a longitudinal level, in which the effects will be even more valid.

Crowdsourcing is a very promising tool for ventures but there are indications that practicing crowdsourcing for innovation can be different for different types of organizations, e.g. international or more local firms, firms with strong or no internal innovation production (Randhawa et al., 2019). For example, the size of an organization can be related to the resources and knowledge a company has to manage a crowdsourcing activity and consequently to the absorptive capacity to leverage the results (Eiteneyer et al., 2019). Hypothetically, bigger ventures might be able to benefit more from crowdsourcing. On the other hand, they might have less resilience because of hierarchical structures and controls (Ford et al., 2015; Lüttgens et al., 2014; Marjanovic et al., 2012). Moreover, different organizations might adopt different appropriability mechanisms. Companies with big cycle of R&D activities might follow more closed value creation processes and strict IP policies (H. Zhu et al., 2014). There is also evidence that cost-oriented firms consider appropriability more important than differentiation-oriented firms (Desyllas et al., 2018). Thus, future research needs to explore how this kind of organizational characteristics influence the innovation activities and processes when engaging in crowdsourcing in order to understand what works best and create more efficient management practices.

Operational aspects of crowdsourcing offer space for further exploration. Platforms, that play a crucial role in crowdsourcing, have been object of classification regarding the main functions and processes, but there are aspects that haven't been approached. Although they exist to serve the needs of organizations and individuals that run crowdsourcing activities or provide solutions, there is not any attempt to solicit their views on their expectations and usability satisfaction regarding platforms. For example, regarding protection from IP spill overs or scams for organizations or work satisfaction for crowd participants (Taylor & Joshi, 2019). Especially regarding crowd, while big part of the media coverage and literature so far deals with how to leverage the crowd skills for the organizational needs, little research has been done to study the benefits for the participants. For example, there is evidence of social and experiential learning taking place throughout the crowdsourcing process, but the effect it has on the crowd personal and professional development has not been explored (Sheehan & Pittman, 2019; Steils & Hanine, 2016). Identifying and publicizing the benefits to crowd participants can increase levels of participation in crowdsourcing activities and amplify the benefits for all the stakeholders. On the other hand, crowd challenges, such as unsatisfaction due to unmet expectations or perceived exploitation and self-perceived barriers to reach their full potential in their performance consist also an understudied area. It is important to orchestrate research efforts, further to understandable ethical concerns, also for organizational reasons (Sheehan & Pittman, 2019). Identifying the participation and engagement challenges can help to discover how they are linked with dropping out of an activity or not participating again.

Scholar interest has been focused to investigate the role of the crowd in the value creation process in crowdsourcing and how certain traits or behaviours are related to a responding performance, for example the innovativeness, creativity, quality, feasibility of their input(Acar, 2019; Hanine & Steils, 2019; Poetz & Schreier, 2012; Steils & Hanine, 2019).

Further to the significance of a single input, some individuals are found to repetitively provide inputs of high value and research should explore how to identify or motivate them in order organizations and platforms to leverage their efficiency and potential in collaborating with them (Boons & Stam, 2019; Zahay et al., 2018). Furthermore, not much research has been done regarding motivating the crowd in different cultural and organizational settings and this need is becoming more prominent in the era of globalization of the workforce (Liu et al., 2012). Last, although extensive research has been exploring the crowd motivations to participate and engage in crowdsourcing activities, the opposite i.e. the organizations' motivations have been understudied. (Alam & Campbell, 2016) dealt with the subject from the perspective of motivational temporality finding that the more mature and experienced a company becomes in acquiring knowledge from crowdsourcing the more their drivers transform from internal, corporate and technocratic, to more external with focus in social engagement and interaction. However, their work is a case study limited to a cultural organization. Thus, future scholars may explore the area studying more and different types of companies to see how their driving motivations influence the crowdsourcing practices and objectives statically and over time.

7 References

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Appendix A

Background Information

Thank you again for accepting to contribute to our scientific research. Completing this form will take around 5 mins. This form serves as an information collection instrument prior to the arranged interview. The first section is about interviewee's personal background and the second about investment background. Information collected at this stage will be helpful for us to navigate better through the interview and analysis process.

Personal Information Background

---

1. What is your age?

☐ 17 or below

☐ 18-20

☐ 21-29

☐ 30-39

☐ 40-49

☐ 50-59

☐ 60 or above

☐ Prefer not to say

2. Which is your gender?

☐ Female

☐ Male

☐ Non-binary

☐ Other

☐ Prefer not to say

If other, please, specify:

_____

3. What is your ethnicity?

☐ African-American ☐ Asian ☐ Black

☐ Caucasian ☐ Latino or Hispanic ☐ Native American

☐ Pacific Islander ☐ Two or More ☐ Other/Unknown

☐ Prefer not to say

If other, please, specify:

_____

4. Where are you based?

☐ Africa

☐ Asia

☐ Australia

☐ Caribbean Islands

☐ Europe

☐ North America/Central America

☐ South America

☐ Pacific Islands

☐ Other

☐ Prefer not to say

If other, please, specify

---

5. What is your marital status?

☐ Never married

☐ Married

☐ Widowed

☐ Divorced

☐ Separated

☐ Prefer not to say

6. What is the highest level of school you have completed or the highest degree you have received?

☐ Less than high school degree

☐ High school degree or equivalent

☐ Some college but no degree

☐ Associate degree

☐ Bachelor degree

☐ Graduate degree

☐ Prefer not to say

7. What is the domain of your educational background?

_____

8. Which of the following categories best describes your employment status?

☐ Employed, working 1-39 hours per week

☐ Employed, working 40 or more hours per week

☐ Not employed, looking for work

☐ Not employed, NOT looking for work

☐ Retired

☐ Student

☐ Other

☐ Prefer not to say

If other, please, specify

_____

9. Do you have entrepreneurial and managerial experience?

Entrepreneurial ☐ Yes | ☐ No

Managerial ☐ Yes | ☐ No

10. What is your current occupation?

_____

_____

11. What is your household income (USD):

☐ Less than $50,000

☐ $50,000 - $100,000

☐ $100,000 - $200,000

☐ $200,000 - $300,000

☐ $300,000 - $400,000

☐ More than $400,000

☐ Prefer not to say

Investing background information

1. What kind of investor are you? You may select more than one. If you select other, please, specify below.

☐ Professional | ☐ Retail | ☐ Corporate | ☐ Institutional | ☐ Angel |

☐ Other

_____

_____

2. What are the industries you invest in?

☐ Agriculture and food businesses

☐ Services

☐ Health

☐ Manufacturing

☐ Transportation

☐ Energy generation

☐ Energy efficiency

☐ Clean tech

☐ Technology

☐ Affordable housing

☐ Co-housing

☐ Alternative residential construction

☐ Urban redevelopment

☐ Others

If there are other industries you invest, please specify:

_____

3. What are the approximate assets managed by you ?

_____

4. Which Equity Crowdfunding platforms have you used so far?

_____

_____

5. In how many companies have you invested in general and through Equity Crowdfunding platforms?

In general (including Equity Crowdfunding)

_____

In Equity Crowdfunding

_____

6. For the companies you have invested through online Equity Crowdfunding, from where do you usually hear about these opportunities?

_____

_____

7. What is the type of firms you invest in general and in online Equity Crowdfunding (repeat completion only if there is difference) ?

Funding Stage

_____

Firm / Product development stage

_____

8. What is the size of a financial investment of yours in general and in online Equity Crowdfunding?

	Investment size range (USD) [min , max]	Most frequent investment size (USD)
General	[,]	

Equity Crowdfunding	[,]	

9. Where is usually the location of your invested firms in general and in online Equity Crowdfunding? You may select more than one.

☐ Local city | ☐ Domestic | ☐ Overseas | ☐ Intercontinental

Appendix B

CONSENT TO PARTICIPATE IN RESEARCH

Dear Participant,

Thank you for agreeing to be interviewed for the research project under the title "Investors' perceptions on innovation in online Equity Crowdfunding". This interview is a part of the research conducted by Ioanna Pavlidou, PhD Candidate in the Department of Industrial and Systems Engineering of the Hong Kong Polytechnic University.

This interview is expected to take around 40-60 mins. Ethical procedures for academic research undertaken from the Hong Kong Polytechnic University require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

Therefore, we would like to confirm that you approve the following:

- as part of the interview, you will be asked to complete a background information form, that will later be anonymized
- the interview will be recorded and an anonymized transcript will be produced
- anonymization of the form and transcript means that the files will be tagged by an anonymous identifier and will not contain your name or other personal information

- any summary interview content, or direct quotations from the interview, that are made available through academic publications or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- the anonymized form and transcript of the interview will be analysed by Ioanna Pavlidou as research investigator
- the interview recording will be kept and access will be limited to the research investigator, Ioanna Pavlidou
- access to the anonymized interview form and transcript will be limited to Ioanna Pavlidou and academic colleagues and researchers with whom she might collaborate as part of the research process
- all or part of the content of your anonymized interview may be used in academic papers, policy papers or news articles, on our website and in other media that we may produce such as spoken presentations, in an archive of the project as noted above

By giving my consent in this form I agree that:

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;

2. The transcribed interview or extracts from it may be used as described above;

3. I don't expect to receive any benefit or payment for my participation;

4. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Appendix C

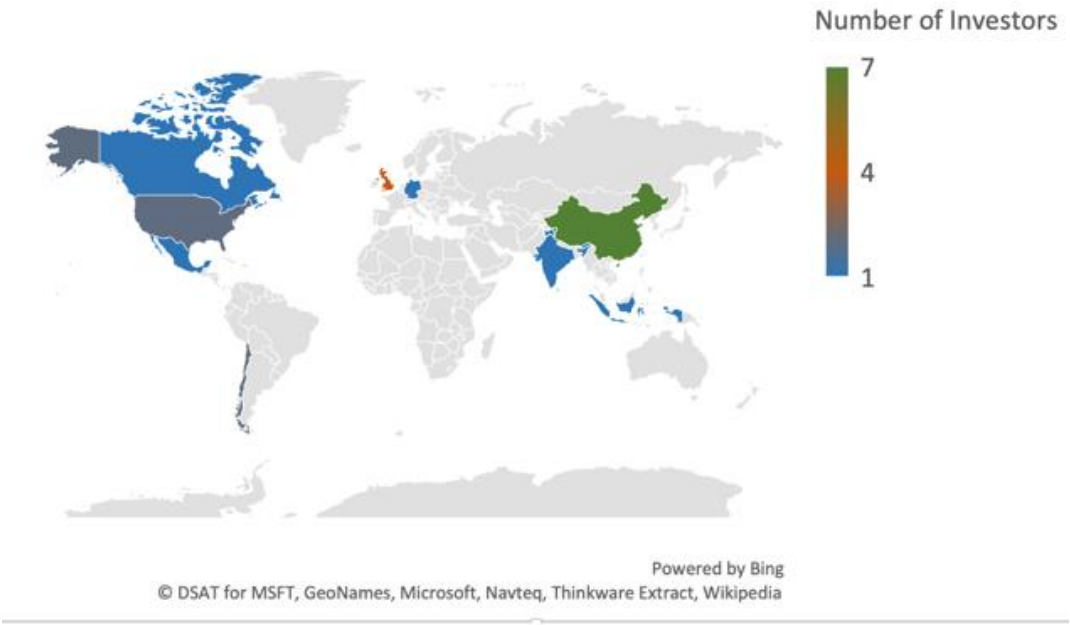

Figure 11 Country-based geographical distribution of interviewed ECF investors

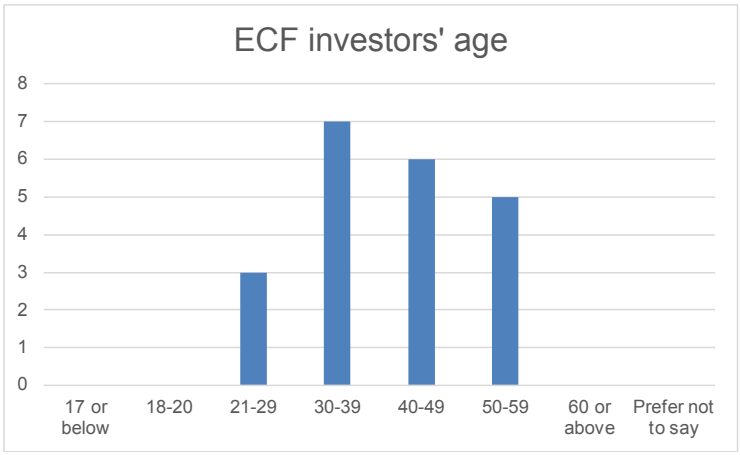

Figure 12 Age of interviewed ECF investors

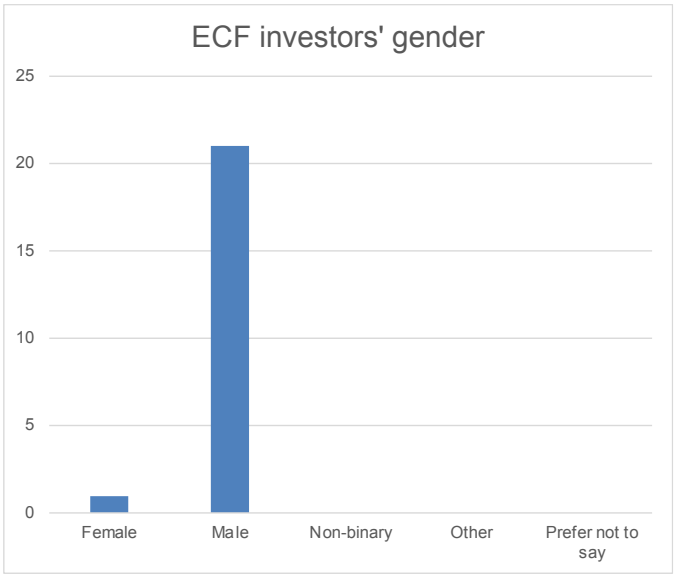

Figure 13 Gender of interviewed ECF investors

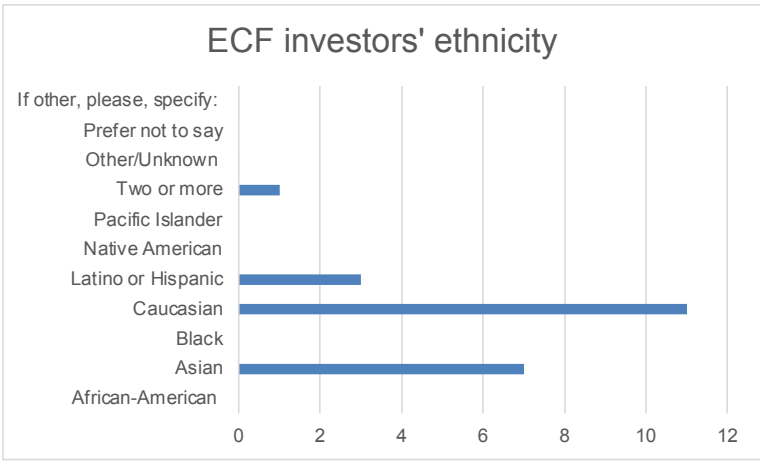

Figure 14 Ethnicity of interviewed ECF investors

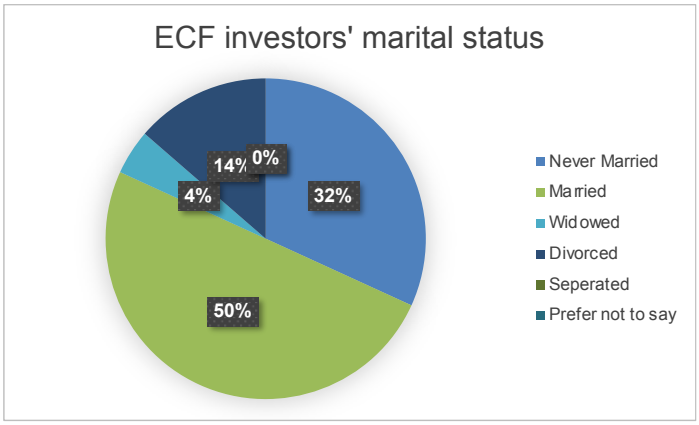

Figure 15 Marital status of interviewed ECF investors

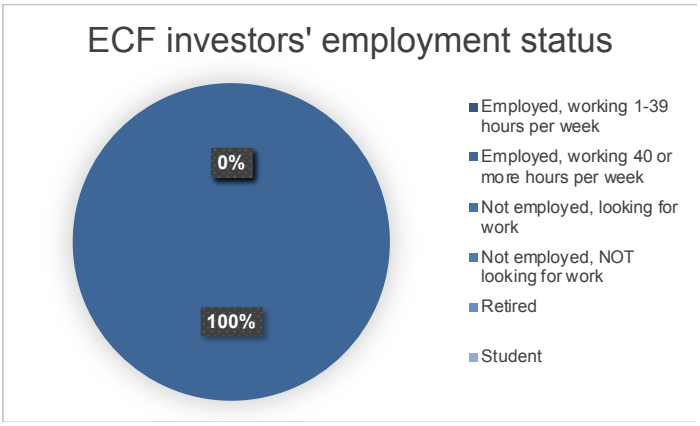

Figure 16 Employment status of interviewed ECF investors

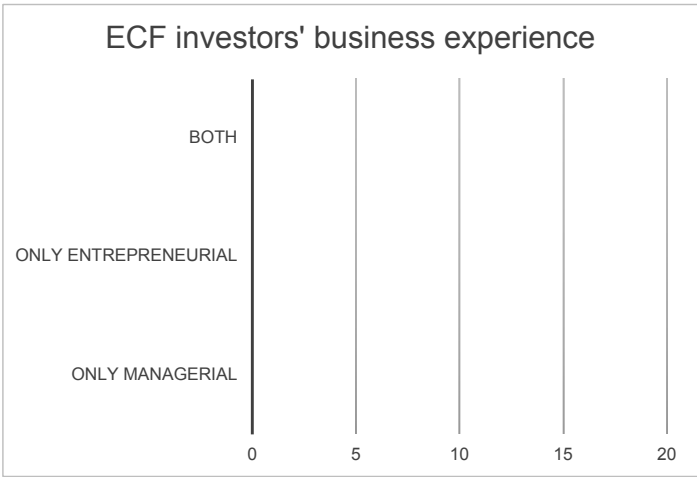

Figure 17 Business experience of interviewed ECF investors

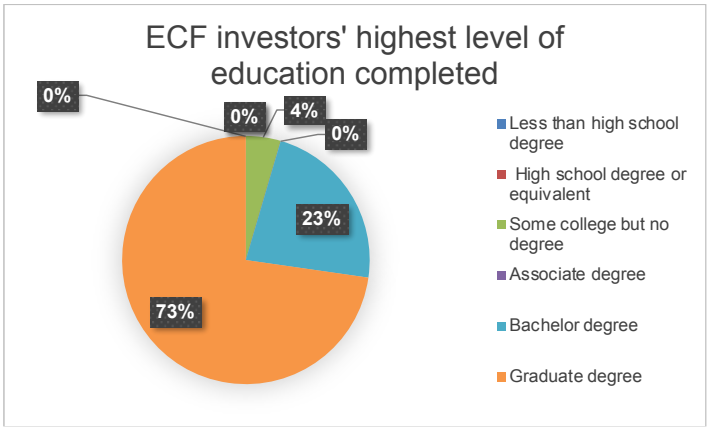

Figure 18 Highest level of education completed by the interviewed investors

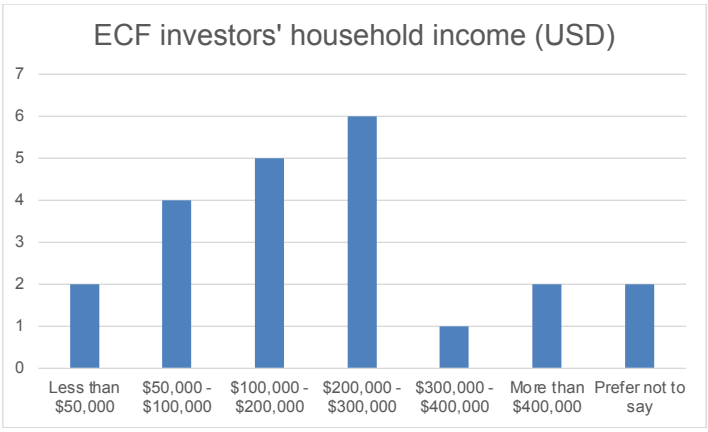

Figure 19 Household income of the interviewed ECF investors

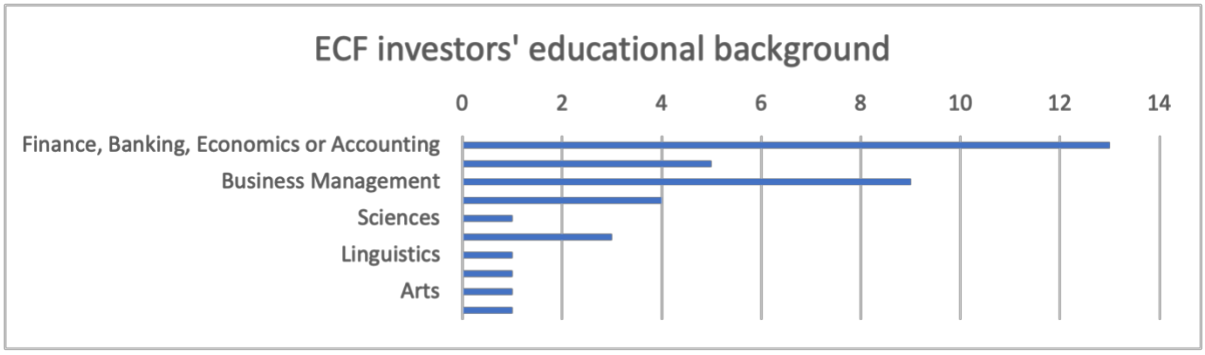

Figure 20 Educational background of the interviewed investors

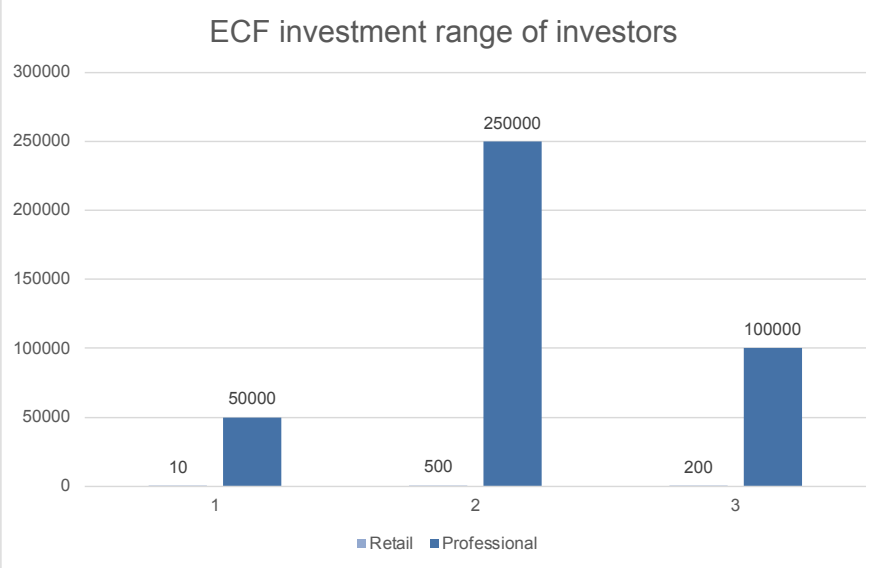

Figure 21 Financial investment range of the interviewed ECF investors

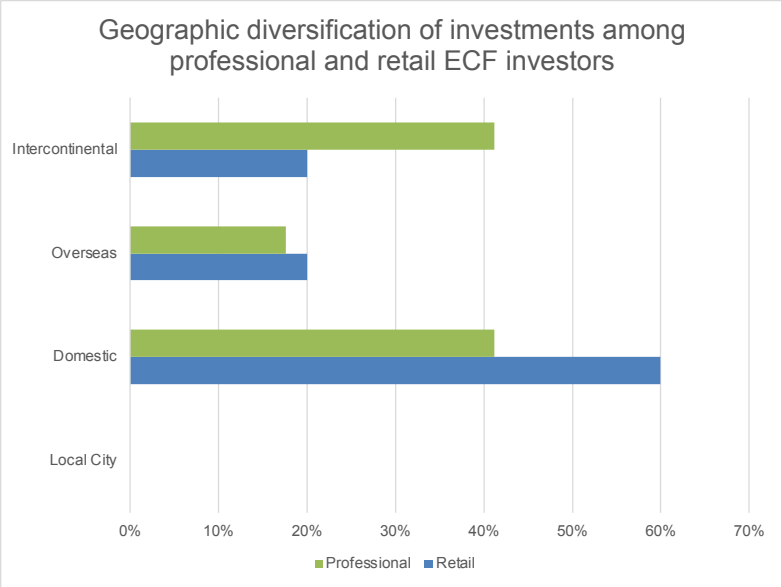

Figure 22 Geographic diversification of the investments of the interviewed ECF investors

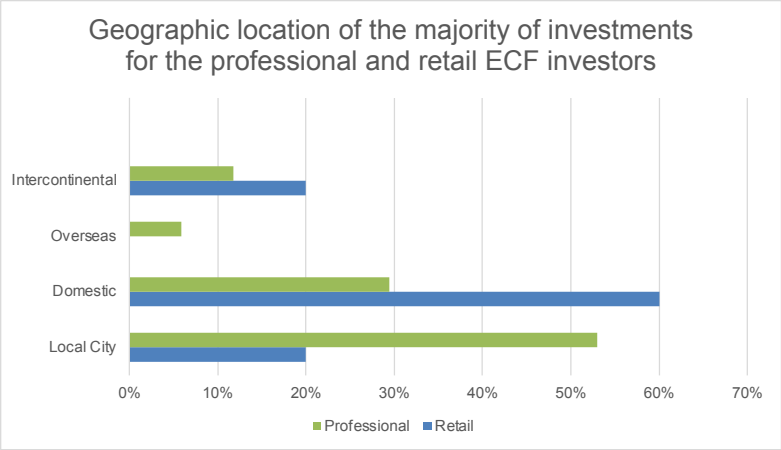

Figure 23 Geographic location of the majority of the investmemts of the interviewed ECF investors