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Growth Factors in Equity Crowdfunding: the Impact of Human Capital and Serial Investors

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Executive Summary – English Version

In the field of entrepreneurial finance, Equity Crowdfunding is gaining a lot of popularity. This is mainly due to its contribution in financing companies that promote innovative initiatives.

A review of the literature showed that the available research has often and willingly focused on the study of campaigns and success factors in Equity Crowdfunding and the number of searches has grown significantly in recent years. However, we have noticed how the available research focuses on these topics, without delving into the consequences that subsequently the use of this tool generates.

Within our paper, taking a cue from the literature on success factors in Equity Crowdfunding, we set ourselves the ambitious goal of filling the gaps related to the study of post-campaign business performances.

Using a dataset of 244 Italian campaigns completed between 2014 and 2018, we demonstrate that companies with high-level human capital, in addition to having greater chances of receiving the required capital, are characterized by greater growth in performance after the completion of the campaign. Furthermore, to broaden the discussion, we demonstrate how post-raising growth does not depend solely on factors linked to company characteristics, but also on the investors who decide to finance the project. In particular, within the crowd, we demonstrate how the presence of professional investors is crucial to ensure the growth of corporate performance after financing.

These results confirm the literature on success factors in Equity Crowdfunding, marking the way for a new line of research that will study the implications deriving from the use of this tool.

Keywords: Equity Crowdfunding, Human Capital, Crowd, Professional Investors, Success Factors, Capital.

Executive Summary - Italian Version

Nell'ambito della finanza imprenditoriale, l'Equity Crowdfunding sta guadagnando molta popolarità. Questo è principalmente dovuto al suo contributo nel finanziamento di imprese che promuovono iniziative innovative.

Una revisione della letteratura ha evidenziato che la ricerca disponibile si è focalizzata spesso e volentieri sullo studio delle campagne e dei fattori di successo nell'Equity Crowdfunding ed il numero di ricerche è cresciuto notevolmente durante gli ultimi anni. Tuttavia, abbiamo notato come le ricerche disponibili si concentrino su questi argomenti, senza approfondire le conseguenze che successivamente l'utilizzo di questo strumento genera.

All'interno del nostro elaborato, prendendo spunto dalla letteratura sui fattori di successo nell'Equity Crowdfunding, ci poniamo l'ambizioso obiettivo di colmare le lacune relative allo studio delle performance aziendali post-campagna.

Utilizzando un dataset di 244 campagne italiane completate tra il 2014 e il 2018, dimostriamo che le aziende con un capitale umano di alto livello, oltre ad avere maggiori possibilità di ricevere il capitale richiesto, sono caratterizzate da una maggiore crescita delle performance dopo il completamento della campagna. Inoltre, per ampliare il discorso, dimostriamo come la crescita post-raccolta non dipenda unicamente da fattori legati a caratteristiche aziendali, ma anche dagli investitori che decidono di finanziare il progetto. In particolare, all'interno della folla, dimostriamo come la presenza degli investitori professionali sia cruciale per garantire la crescita delle performance aziendali dopo il finanziamento.

Questi risultati confermano la letteratura sui fattori di successo nell'Equity Crowdfunding, segnando la via per un nuovo filone di ricerca che studierà le implicazioni derivanti dall'utilizzo di questo strumento.

Parole chiave: Equity Crowdfunding, Capitale Umano, Folla, Investitori Professionali, Fattori di successo, Capitale.

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1 Introduction

Equity Crowdfunding (ECF) is a financing instrument in which an entrepreneur sells equity or equity-like shares of his company to a group of (usually small) investors through an open call for financing on platforms operating on the Internet (Ahlers et al., 2013). The popularity of this phenomenon is constantly growing (Cordova et al., 2015), especially if we consider the attention it is creating among the media and political figures. The continued growth in popularity of this phenomenon could bring, in the not too distant future, a significant contribution to the financing of highly innovative initiatives, thus becoming a reference point for innovation, employment and economic development.

Equity Crowdfunding represents an evolution of the broader phenomenon that preceded it: the crowdfunding. Thanks to the creation of Web 2.0, it has been possible to enable crowdfunding, which can be defined as the efforts of individuals and business organizations - cultural, social and for profit - to finance their own initiatives by drawing on relatively small contributions from a relatively large number of individuals using the Internet, without the involvement of standard financial intermediaries (Mollick, 2014).

Before evolving, creating phenomena such as the one on which this paper will be based, crowdfunding has mainly focused on projects in the fields of art, music and creativity and the capital raised from the crowd was often exchanged for donations or rewards from the company (Felipe et al., 2017).

Equity Crowdfunding, as we know it today, was born in 2010.

Less than three years later, Equity Crowdfunding was not approved by regulators in the United States and many other parts of the world in mid-2013, accounting for less than 5% of all crowdfunding investments (Massolution, 2015). Thanks to the approval of the JOBS Act and a few successful funding campaigns, however, the phenomenon has developed rapidly, especially in the more developed countries, thanks to a good number of companies that have become interested in this new tool.

From a start-up point of view, Equity Crowdfunding has begun to represent a valid alternative to the fundraising channels typical of traditional entrepreneurial finance: family and friends, business angels and venture capitalists on the side of property titles, bank loans as creditor titles. In recent years, these more traditional channels have shifted their focus towards different investments, focusing on larger companies, thus making room for this new channel (Collins and Pierrakis, 2012). Many business angels only look

at companies looking to raise larger amounts, and venture capitalists have largely left the early stage space, as small offerings are increasingly dwindling and are not suited to the sustainability of their business model. Equity Crowdfunding could therefore play an important role, bridging a gap, the so-called "no man's land", which has been created between the preferred investment dimensions for business angels and venture capitalists and the need for capital of start-ups. Furthermore, scenarios of coexistence between ECF and traditional instruments must not be excluded.

Equity Crowdfunding has a significant advantage: it is a cheaper mechanism than regulated markets or secondary markets on the stock exchange. In particular, the costs that the entrepreneur has to bear are modest compared to standard stock markets. A study by Gabison (2015) states that the average commission of a crowdfunding platform is between 4% and 7% of the capital raised. If, from the point of view of the entrepreneur there are cost advantages, from the diametrically opposite point of view, that is that one of the investors, the main problems of this instrument can be immediately identified. The inexperienced investors, who make up the crowd, may be unable to perform due diligence, investing in an unprofitable project or worse in a scam, thereby losing their capital (Danmayr and Lehner, 2014).

The literature has shown in this sense that professional investors play a fundamental role in this type of Crowdfunding, while their weight is much less in the other types. For example, Zhang et al. (2016) found that corporations and institutional investors such as venture capital firms, angel investors, family offices and funds account for a large share of investors' share in Equity Crowdfunding.

In fact, unlike other financing instruments, most professional investors play a fundamental role even after the exchange of capital and shares. These are involved in the company and initiate a professionalization process for start-ups (Hellmann and Puri, 2002). Mentoring, support in recruiting prestigious underwriters and access to networks that help to acquire customers and suppliers are just some of the common practices that investors carry out in companies (Cumming and Zhang, 2017; Gompers and Lerner, 2009).

The success of an Equity Crowdfunding campaign is sanctioned by the achievement of a predefined capital threshold, called target. If this is not achieved, the money is returned to the investors. This process is challenging and many studies in the literature have tried to analyse the success factors that have enabled the completed campaigns to successfully raise capital. In particular, the entrepreneurship literature has found a particularly positive

relationship between human / social capital and probability of success (Unger et al., 2011; Piva and Rossi-Lamastra, 2018).

1.1 Contributions

Our literature review highlights how research on success factors in Equity Crowdfunding has increased significantly in recent years, thanks to the rapid growth of the phenomenon. However, currently available literature has focused on studying ECF campaigns rather than post-campaign business performance. This topic is very relevant, and several authors have suggested it as a possible study in the future. In particular, Professor Evila Piva, whose studies, carried out with Cristina Rossi-Lamastra, are a point of reference for this topic, whom we had the opportunity to meet in person during the conception and implementation of this research work.

Our goal is, therefore, to expand the growing literature on Equity Crowdfunding, with a specific focus on the role of human capital and professional investors on corporate financial performances after the end of the campaign.

Starting from previous studies, in particular those that analysed the human capital and the success of the campaigns (Piva and Rossi-Lamastra, 2019), we use the data available to us for the study of post-raising performances.

To provide evidence to support our hypotheses, we hand-picked the list of all of all Italian campaigns from 2014 to 2018 and information relating to all members of the entrepreneurial team of each company concerned. Thanks to a sample made up of 244 campaigns and over two thousand data relating to the human capital of companies, we have exploited econometric models to obtain the results of interest.

Using a Probit model we have shown how the percentage of business graduates and the average entrepreneurial experience of the foundation team positively affect the probability of success of an ECF campaign. Subsequently, we showed through a 2SLS model, that human capital not only impacts on success, but also on subsequent growth, in particular the percentage of business graduates proved to be the most significant characteristic. Finally, we have created an OLS model and obtained empirical results that highlight how professional investors are not only able to influence success, as already present in the literature, but also stimulate growth thanks to their specific skills. To conclude our analysis, we have included the limitations that have characterized our work and future developments.

1.2 Dissertation's Structure

The thesis has a classic structure.

Chapter 2 focuses on an overview of the reference ecosystem in which an investigation will be conducted. Starting from the history and evolution of Crowdsourcing and Crowdfunding, we underline the developments that have allowed the creation and diffusion of Equity Crowdfunding. We then move on to an in-depth analysis of the mechanisms underlying this method of raising capital, providing a complete overview of the international and national legislation currently in force. Subsequently, we move on to a collection of studies on the role of human capital, both in relation to success in Equity Crowdfunding, and to business growth in general and to a presentation of some professional figures (BAs and VCs) and the performance of companies in which these actors invest in. We conclude the chapter with the identification of the most relevant research gaps.

Chapter 3 takes up some concepts dealt with in the literature review and then continues with the formulation of the hypotheses that we intend to test with the data at our disposal and the econometric knowledge we possess.

In Chapter 4, we will discuss the data collection process in detail. The methodology used, the sources and the construction of the database will be the cornerstones of this section.

In Chapter 5 instead we will introduce all the variables used, defining them and explaining the choices made. Specifically, we will provide an overview of the methodology followed during the creation of the variables associated with the data in our possession, with a focus on the control variables and the related bibliographic references.

Chapter 6 includes a description of the models used to test the research hypotheses and their results.

A robust regression is performed for each model used to confirm its validity and results. In addition, useful descriptive statistics, VIF and correlation matrices are attached to each model.

The Chapter 7 marks the end of our paper, including the conclusions we have drawn, the solutions and future developments that our work could bring.

2 Literature Review

The purpose of this dissertation is to analyse the performances of companies that decide to enter the world of Equity Crowdfunding, with the aim of identifying the main changes resulting from the success of the campaigns.

The analysis will focus on the Italian campaigns from 2014 to 2018 but before going into details, it is necessary to present an overview of this phenomenon in order to fully understand what Equity Crowdfunding is and what are the reasons for its diffusion, as well as to the benefits that derive from this process. In this sense, the literature review will be divided into two sections with different objectives and levels of detail. Subsequently a third section will introduce the specific topics of our paper.

The objective of Section 2.1 (“Crowdfunding”), is to create a general overview of the phenomenon thanks to the abundant availability of academic knowledge about it, providing a basic understanding of its most widespread characteristics and practices. Within the chapter, the various subsections first examine the evolution of the phenomenon over time, thanks to a historical overview of crowdsourcing, from which crowdfunding as we know it today has developed. To do this, it is essential to focus on the enablers that have allowed the spread of crowdfunding, from the birth of the Internet to Web 2.0. Subsequently, the analysis will turn to the main stakeholders of this broad ecosystem: fundraising, the crowdfunding platform and the crowdfunder (Hornuf and Schvienbacher, 2016), to understand that we are not in the presence of isolated players but of a dynamic environment that exists thanks to the interactions of its actors (Laplume et al., 2008). Each player is then analysed to understand the reasons that push him, the benefits sought and the potential risks to which he is exposed in this system.

Subsequently the analysis will deepen the taxonomy of crowdfunding. As for the general classification of crowdfunding, we will use Harrison's model (2013), which divides it into five distinct models - according to the quid-pro-quo offered to crowdfunders, which obviously also includes the one based on equity. Each different typology will be treated with the aim of identifying the relative advantages and disadvantages, based on the authors who have already extensively investigated these aspects. To conclude, let's examine the main factors that an entrepreneur should take into consideration when deciding to finance his company with crowdfunding, in particular in terms of existing

resources, risks, organizational form, control preferences, required resources and, lastly, wisdom of the crowd (Schwienbacher and Larralde, 2010).

In Section 2.2, the details of Equity Crowdfunding, the main topic of this thesis, are explored to identify the aspects that distinguish it. It must be emphasized that the research on Equity Crowdfunding is rather limited to recent history, and that although the first conclusions are being drawn, the existing studies remain very fragmented, and each new contribution is added to a series of evidence that certainly must be further investigated. All the researches collected and reported in this dissertation have as their main purpose to report the main characteristics of this particular ecosystem. The following sections contain the definition, evolution and relationship with traditional equity finance, with a focus on the Italian ecosystem also in terms of regulation.

2.1 Crowdfunding

The creation of a new business is a process full of challenges for every entrepreneur, among these the raising of capital plays a central role. Often, in the early stages after creation, which do not require large amounts of money, entrepreneurs use resources owned by or belonging to friends and relatives ("F&F"), which in the entrepreneurial finance literature are labelled as the primary source of informal capital (Lee and Persson, 2016). However, when the commercial enterprise passes its initial stages, capital demands increase significantly and entrepreneurs turn to more traditional channels such as business angels, venture capital funds and banks.

However, raising money through these channels is not always easy, since the financial requirements imposed can hardly be guaranteed by start-ups, which normally have low cash flows, low margins and limited collateral (Cosh et al., 2009). For example, on average only 1 in 100 start-ups gets VC funding. As for emerging markets, the ratio drops further, to around 1: 250 (Reyes, 2018). A rationing mechanism can be useful to explain this phenomenon, but not in its entirety.

In recent years, the combination of the growing number of initiatives requiring external capital and the decline in the profitability of financial institutions as well as the rise of disruptive technologies, often enabling disintermediation, promoted the innovation of alternative finance as a new way to replace traditional paradigm. (Wardrop et al., 2015). Alternative financing, outside the confines of the traditional banking sector and capital markets, has begun to emerge in various economies and industries especially in the United States and Europe. In the wake of this phenomenon and by providing themselves with the Internet, some entrepreneurs have decided to seek funding directly from the large public, the so-called "crowd", instead of having to depend on classic professional investors. In this situation, a new financial instrument has emerged, called "crowdfunding", thanks to which a significant number of projects and business initiatives - which otherwise could not have raised money - have raised the necessary funds. Obviously being a tool born recently, crowdfunding continues its development and evolving into new forms. For now, it has been very useful within the technology sector by closing the asset gap, but it is also diversifying into other separate sectors such as, for instance, real estate (one of the most developed), art and others (Felipe et al., 2017).

2.1.1 Definition

One of the main objectives that the authors of the literature have tried to pursue is to create a complete and precise definition of the concept of crowdfunding. Given the speed of changes related to this new practice, it was not easy to create a fairly shared debate, but on the contrary it required continuous updates and additions to previous attempts by the authors themselves. For example, to understand the difficulties it is enough to consider that this phenomenon has rapidly spread to a great variety of sectors and has been used to finance projects in various fields, ranging from the more traditional sectors, such as entertainment, food and drink or energy, to the most innovative such as cleantech, biotech and e-commerce companies (Hervé et al., 2019).

Looking at the speech from a purely historical perspective, crowdfunding has its roots in the advent of "crowdsourcing", a notion first introduced by Howe and Robinson in 2006 in Wired Magazine. The crowdsourcing name is made up of two words: crowd, which refers to the people who participate in the initiatives; and sourcing, which identifies procurement practices whose goal is to find, evaluate and engage suppliers of goods and services.

The first academic contribution in this regard was provided by Kleemann et al. (2008), who defined crowdsourcing as the practice through which the "crowd" is used to obtain ideas, solutions and feedback, which are then useful for expanding one's business idea, with the aim of improving it. All other activities that rely on the web but do not include in the value creation process of the company, can be considered as activities associated with crowdsourcing, but remain peripheral.

Table 1 shows the different types of crowdsourcing, which Kleeman et al. defined on the basis of the degree of consumer involvement in the various stages of the value creation process of companies. Crowdfunding is not explicitly included in this characterization, but it can still be seen as a broader degree of consumer involvement in value creation. In fact, crowdfunding is a part of crowdsourcing as it brings together a large network of individuals with the intent of providing financial help to the company.

Type of Crowdsourcing	Description
Participation of consumers in product development and configuration	Companies ask for comments and suggestions regarding the design and configuration of current or future products.
Product design	Companies involve the crowd in the full development of a totally new product specifically designed to satisfy their needs.
Competitive bids on specifically defined tasks or problems	Companies ask to give a solution to problems and users are remunerated if able to solve them.
Permanent open calls	Companies ask for any new information or documentation.
Community reporting	Same as before apart that the call to action targets a specific and known audience.
Product rating by consumers and consumer profiling	Companies ask for product reviews and opinions for other users to see.
Customer-to-customer support	Companies ask customers to help other customers that are facing similar issues or challenges, sharing experiences or suggestions through internet tools like forums or chats.

Table 1: Taxonomy of Crowdsourcing (Kleeman et al., 2008)

Due to this reason and thanks to the growing popularity of crowdfunding, the authors have been pushed towards implementing the concept of crowdfunding in this field as well, for greater clarity. In this sense, the contribution of Schwienbacher and Larralde (2010) is relevant, who in an article described crowdfunding as "an open invitation, essentially through the Internet, for the provision of financial resources in the form of a donation or in exchange for some form of reward and / or right to vote to support initiatives for specific purposes". A little later, Mollick (2014) argued that this definition was incomplete as it did not take into account of the latest forms of crowdfunding, such as internet-based peer-to-peer lending. The author therefore wanted to complement it, describing crowdfunding as "the efforts by individuals and business groups - cultural, social and for profit - to finance their initiatives by drawing relatively small contributions from a relatively large number of individuals using Internet, without standard financial intermediaries". This definition is considered exhaustive as it takes into consideration all

the possible forms through which crowdfunding can be used, without limiting future expansion due to possible changes that this service may undergo.

Table 2 includes other relevant contributions that are useful for understanding what crowdfunding actually is. Although the different definitions are certainly similar, it is interesting to note how on the whole they face different facets and shades of the same concept.

Author(s)	Definition of Crowdfunding
Bechter et al. (2011)	An approach to raising capital required for a project or enterprise by appealing to large numbers of ordinary people for small (1\$ - 100\$) contributions.
Lynn and Sabbagh (2012)	A relatively new outgrowth of social media that provides an emerging source of funding for variety of ventures.
Sigar (2012)	A capital formation strategy that rises small amounts of funds from a large group of people through online means.
The European Crowdfunding Network (2013)	Crowdfunding is the mechanism of pooling and distributing relatively small financial investments from a large audience of supporters in exchange for equity or liabilities carrying financial returns or other non-financial rewards, where supporters are people or organisations who network, usually via the internet, to jointly support other people or organisations.
Wheat et al. (2013)	A financial mechanism that allows start-up companies to solicit funds from the general public through website intermediaries.
Stanberry and Aven (2014)	Same as before apart that the work is done by a known community instead.

Table 2: Additional definitions of Crowdfunding

2.1.2 Evolution of Crowdfunding

Crowdfunding does not only include technical and financial aspects and for a complete understanding of this concept it is necessary to have an understanding of the logic, tools and background that made it possible to spread it.

The date of appearance of this instrument is not known with certainty, according to some authors, Pränumeration¹ in Germany represents the first true example; according to others, some mechanics were already present at the time of Mozart (18th century) and Beethoven (19th century), illustrious composers who wanted to pre-sell their music (Avery et al., 2012; Röthler and Wenzla, 2011). In general, there are several episodes of crowdfunding throughout history. Among which we must mention the creation of the pedestal of the Statue of Liberty. In 1874 France, to celebrate the centenary of the independence of the United States of America, gave him the famous statue. At the time, however, the United States did not have the necessary capital to build the foundations and, therefore, donations from the people were used to definitively complete the monument. In that case, it was the famous journalist Joseph Pulitzer, the editor of New York World, who led the press campaign designed and built to reach the public. Thanks to this mechanism, the United States was able to raise \$ 100,000 (Hemer, 2011).

We can say with certainty that the first historical use of crowdfunding is not a univocal discourse, but nevertheless, most of the authors in the literature agree that with the advent of Web 2.0 at the end of the nineties, Crowdfunding has developed as a we know him today. In fact, it is undeniable that this technology is universally considered as an enabler of many innovations, which in most cases involve a wide and dispersed network of users, and has been fundamental to allow entrepreneurs to reach the largest possible number of people, in a way to create a large “crowd” (Brabham, 2008). While in the examples cited above certain initiatives were limited to specific geographic areas, with Web 2.0 any user interested in a project, regardless of his position, can participate remotely. However, there are some authors such as Bottiglia et al. (2016) who point out that Web 2.0, despite having acted as an enabler, is not the only motivation to be taken into consideration when trying to explain the rapid evolution of crowdfunding. For example, the inefficiencies of the capital markets in the late 2000s, which tended to be too complicated and bureaucratic, are certainly another of the reasons that led to the spread of this tool. In fact, crowdfunding's ability to leverage openness and transparency offers businesses

innovative access to money with all the benefits that follow. True Crowdfunding was born in this scenario and in 2008 and 2009 the two leading platforms appeared on the web: IndieGoGo and Kickstarter. IndieGoGo founders, Danae Ringelmann and Slava Rubin, aimed to "democratize fundraising" and "empower creative entrepreneurs". The real key to the success of these platforms is represented by the average user, who at the time, after having financed a project, did not necessarily expect a cash reward, but was willing to obtain experiential rewards or reimbursements. Crowdfunding based on the issuance of securities was born later, in 2010. The extraordinary success of this crowdfunding model certainly derives from the economic situation of the time, as the credit crunch had had a significant impact on start-ups. These companies, which by definition are risky, could not easily obtain funds from the banking sector, which in response to the economic crisis of the time limited the riskiest investments and was uncertain about the legal implications of these new methods of financing.

In its initial form, the value of crowdfunding was perceived by its sponsors as mostly social and emotional, being able to finance the creation of something useful or at most receiving a non-monetary reward, but no economic returns were thought of. This is one of the reasons why the development of Crowdfunding is closely linked to the social web, and it is thanks to the latter that the financiers have had the opportunity to create peer-investor social networks with common interests. Crowdfunding is truly a perfect example of how share capital can be transferred into real money. Users themselves can become real entrepreneurs, providing the capital necessary for the development of a business or even becoming lenders of real investments, with a small amount of money and reduced risk (Röthler and Wenzla, 2011).

2.1.3 Actors Involved

The functioning of crowdfunding is closely linked to the actors that we find within its process, which is why it is essential to define them precisely. This ecosystem is in fact influenced by each actor, in different ways, creating different practices with different characteristics. Stakeholders should not be considered as isolated groups but act and interact to create a dynamic environment (Laplume et al., 2008). For this reason, it will not only be useful to identify all the different actors, but also to consider the influence of

each category within the ecosystem. There are three key figures that must be collaboratively involved in order for the loan to be completed: the Fundraiser, the Crowdfunding platform and the Crowdfunder (Hornuf and Schwienbacher, 2016).

The corresponding sections are shown below, in which each figure will be analysed in more detail.

The Fundraiser

The term fundraiser usually tries to identify an individual or an organization that approaches the world of crowdfunding with the intention of obtaining capital. The founder of a start-up that needs capital to start the business, an organization that needs funds for charitable reasons, or an artist who needs to finance his projects or publications, are possible examples of what a fundraiser. The goals that drive these individuals are often as diverse as the backgrounds they come from. Different terms have been used in the literature, such as "creator", "borrower", "entrepreneur", "company", "founder", "owner" and "start-upper". However, it is necessary to consider that not all people seeking finance can classify themselves as entrepreneurs or have the goal of starting a business. Within this paper, the notion of fundraiser is associated with the creator of a project, the entrepreneur who proposes the ideas and / or projects (Mollick, 2014).

The needs of the promoter of a crowdfunding campaign often also vary according to the crowdfunding model they decide to use (see 2.1.4 "Taxonomy of Crowdfunding").

Obviously, the fundraiser plays a role of absolute centrality within crowdfunding and for this reason it is necessary that his ideas, such as the creation of a product or the realization of a new project, are presented in a clear and convincing way to potential supporters through the appropriate platform. To ensure transparency, the information is managed directly by the promoters themselves on the platform, even while the campaign is in progress. Often the success of campaigns depends on the experience of the promoter, which can be measured along two different dimensions: business experience and product experience (Beaulieu et al., 2015). Founders with business experience have initiated previous ventures or have been involved in start-ups and have the skills to transform a business from concept to ongoing business. The second type of experience is related to the technical knowledge of the product or the project itself. Although the fundraiser is often a single individual, there are cases where we find a team of people working together to finance and complete the project. Also in this case, the team's skills must be taken into

account, which can vary: for example, in some crowdfunding models, there is a mix of members with business and product experience.

The creation of a crowdfunding campaign is not to be considered as a result of the fundraiser's simple goal of raising capital. In this regard, suggestions on some common secondary objectives can be found in the literature. The first could be to test an idea on the market, measuring the interest in potential new products and, in some of its models, to secure a pre-order channel, functioning as a marketing tool (Sayedi and Baghaie, 2018). The second objective could be to exploit the success of a campaign to obtain visibility and reputation, it has in fact been shown that a significant percentage of companies that raise funds through crowdfunding continue to raise additional capital (Signori and Vismara, 2018). Third, entrepreneurs could leverage the campaign to obtain validation and assess the feasibility of the project, ensuring that the critical mass of production can be achieved (Crosetto and Regner, 2014). Finally, the last goal could be to collaborate with the lenders themselves, creating a real communication tool. According to Gerber et al. (2012) in fact, the creators of crowdfunding campaigns are often motivated to successfully complete the campaign also due to the direct connection that is created with the lenders and which often extends beyond the moment of the financial transaction, evolving into a long term relationship.

The Crowdfunding Platform

The figure of intermediary within crowdfunding transactions is carried out by real platforms, which allow interaction between entrepreneurs and the crowd. Website providers interface with all stakeholders and are the hub of the ecosystem.

The task of website providers is quite intuitive, that is to organize and control the crowdfunding campaign and subsequently ensure its regularity for both promoters and supporters. Among other things, crowdinvesting portals provide standardized financial contracts to the issuer, offer marketing and communication guidelines, and expose the company to a network of investors through advertising on the portal's website and in newsletters. These services are obviously not free, which is why the platform gets a predefined share of the total collected in the campaign. The platform model can be of two types:

- *All or Nothing*: The crowdfunding campaign starts by setting a predefined investment amount as the goal of the campaign, which must be reached within a

specified time period. If entrepreneurs fail to raise at least this amount, they will return the money to mass investors. On the other hand, when the fundraisers manage to raise the target capital, the campaign is closed and no other crowdfunder can send money into the project. Usually in this type of campaign the credibility of the project is perceived as very high, as entrepreneurs must provide an accurate and reliable estimate of how they will use the proceeds of the investment from which the amount invested is then derived. For this reason, the fundraiser must present a very detailed and realistic business plan, also leaving less room for possible fraud.

- *Take it all*: it is a model that is used exclusively in donation-based crowdfunding. In this case, companies are willing to accept whatever money they can get from the campaign, so it is unlikely that it will be applied to business projects. The reason is that it has low credibility: entrepreneurs usually have to specify what they intend to do with the investment process, and this is more complicated when the amount they need is not specified in advance.

In this regard, (Cumming et al., 2020) studied that on average "all or nothing" campaigns are more likely to be successful because they offer a guarantee to the crowd that the entrepreneur does not start a project with low funding. The commissions that entrepreneurs have to pay to the platforms also derive from the campaign model that is chosen and at the same time also the way in which commitments are transformed into loans.

The design of crowdfunding websites is constantly evolving and future iterations intended to provide sufficient revenue stream could be aimed at "freemium" business models to support innovative features and technologies (Braet et al., 2013). Technology is often recognized for ensuring transparency. However, in some crowdfunding websites, not all information related to a campaign is accessible to everyone, in particular access to business plans is limited and some types of information are privileged over others. For this reason, it is fair to say that technology guarantees transparency, but only for some types of information and for some groups of stakeholders. Crowdfunding website providers are a crucial player in the ecosystem because it is through these websites that both the structure of a crowdfunding agreement and the legal requirements are applied (Gelfond and Foti, 2012). Although crowdfunding websites provide no guarantees that projects will deliver on their promises, suppliers can take full advantage of fraud prevention (Sigar, 2012).

The Crowdfunder

The crowdfunder is part of the crowd and its role in the process is to provide the financial resources for the project. Depending on the type of campaign in which he decides to take part, he can obtain returns of a different nature. These will be analysed in more detail in 2.1.4 Taxonomy of Crowdfunding, but they can still be generalized as social and / or emotional fulfilment, rewards proposed by the creator and, finally, financial returns. Within the ecosystem that crowdfunding represents, there are other stakeholders, which must be considered as they are involved in the process. The most common are lawyers, notaries, consultants or industry experts who support the platform and initiators in their campaigns and who provide consultancy services. For example, most platforms are assisted by consultancy firms during project risk assessment and due diligence.

In addition to these, we must not forget another very important category, the supervisory bodies. Given the recent and widespread diffusion of these platforms, the authorities have drawn their attention to the crowdfunding phenomenon. In this regard, in various countries, ad hoc regulations have been created that cover this segment, in order to avoid problems relating to the application of regulations designed for other phenomena.

Obviously, these regulatory frameworks are still very fragmented both from a geographical point of view and as regards the “crowdfunding model” (notion that we will deal with in paragraph 2.2.5, “Regulation”). In fact, although in recent years several countries have begun to regulate aspects directly related to crowdfunding, a path of complete sharing has not yet been undertaken; this is partly due to the need to adapt regulations to the specific characteristics of the country's economic system and partly due to the trial and error process that guides the decision on the trade-off between flexibility and stakeholder protection. Furthermore, the level of "perceived risk" by the regulator is not homogeneous if we compare the different crowdfunding models and this has led to a greater concentration by the authorities towards the regulation of securities-based crowdfunding, ending up partially neglecting the others.

All in all, the landscape of existing and future regulatory frameworks for crowdfunding is very liquid.

2.1.4 Taxonomy of Crowdfunding

The first sectors that have been affected by the advent of crowdfunding are artistic, musical and social or creative activities, for this reason, in most cases, the capital provided by the crowd often corresponded to a donation or prizes provided by the company.

The rapid growth that characterized this innovative financing instrument soon favoured the broadening of its horizons leading to the development of new forms of crowdfunding. In particular, we have witnessed the introduction into the market of crowdfunding, a sub-category of crowdfunding that deals with the financing of business growth and innovation (Bradford, 2012; Klöhn and Hornuf, 2012).

By “Crowdfunding” we refer to a process in which the crowd provides capital in exchange for a credit from the corporate cash flows that will occur following the financing (Hornuf and Schwienbacher, 2016). In most countries, crowdfunding has been so successful that the same issuers have turned en masse on this type of financing instrument, massively abandoning campaigns based on donations, prizes or rewards (Belleflamme et al., 2012). The real advantage of crowdfunding is represented by the long-term returns it guarantees: interests, dividends and / or part of a company's earnings are in fact a long-term and variable reward and for any investor they arouse much more interest than short-term ones. term.

Harrison (2013) classifies crowdfunding into five distinct models based on the quid-pro-quo offered to crowdfunders, which can be divided into two clusters. The following literature review will include a description of the three sub-categories of crowdfunding: the equity-based model, the loan-based model, and royalty-based crowdfunding. To conclude, an overview of the remaining crowdfunding methods that are not considered crowdfunding will be presented: donation-based crowdfunding and reward-based crowdfunding.

Equity-Based Model

Equity Crowdfunding is a tool used by unlisted companies that are often in the initial stages of exchanging shares, through an online platform that acts as an intermediary. In other words, this tool allows supporters to become shareholders, without the company actually being listed but simply in exchange for providing capital to develop the entrepreneur's specific business or project (Collins and Pierrakis, 2012). The shares

offered to the crowd are not limited to those without voting rights, but voting shares are also often offered, especially in the case of large investments, allowing the crowd of investors to become an integral part of the company itself.

The promoters of the project will share the revenues and decision-making power with the supporters, so the entrepreneur runs the risk of losing full control of his business when the crowd gets the right to vote (Agrawal et al., (2014). In the vast majority of cases, all successful Equity Crowdfunding campaigns represent projects that would never have been financed by a bank, given the high risk of start-ups and that, due to their too low returns and high transaction costs, would never have been attractive to private equity or venture capital funds. Following this reasoning, it is possible to say that equity-based crowdfunding in a certain way bridges the gap in the pre-seed and seed phase of the financing cycle. Share-based crowdfunding is a cheaper mechanism than regulated markets or secondary markets on the stock exchange. This derives from lower costs to be incurred for the entrepreneur compared to traditional regulated exchanges.

A study by Gabison (2015) explains how the crowdfunding platform's commission is between 4% and 7% of the capital raised. On the other hand, the equity model is considered the riskiest form of investment (Danmayr and Lehner, 2014), in fact in the event of a bankruptcy or unprofitable project, lenders could lose the capital invested, having to face the risks of bankruptcy or insolvency. Among all the models available within the crowdfunding world, this way represents one of the most recent ones. Just a few years ago, towards mid-2013, Equity Crowdfunding was still rare around the world and even not allowed in some countries such as the United States, accounting for less than 5% of all crowdfunding investments (Massolution, 2015). After the approval of the JOBS Act and a few successful funding campaigns, however, the phenomenon developed rapidly and the number of platforms grew significantly in more developed countries. However, according to the most recent studies, Equity Crowdfunding is still limited, with a turnover of around 2.5 billion dollars in 2015.

Lending-Based Model

In this model, which is called lending-based, investors provide their capital to support the project, but for a limited period of time. Once a specific deadline has been reached, the capital returns to the hands of the investor, who is remunerated through interest

(Bannerman, 2013). In this case, which bases its functioning on the loan mechanism, the supporters have no decision-making power but only monetary rights.

The real benefit of this tool for borrowers is the ability to access funds quickly and generally at lower interest rates than those offered by banks, making it an attractive loan alternative for entrepreneurs. The issuing process begins when the platform lists and selects the companies or individuals applying for loans and analyses the track records of the applicants to assess their risk. Risk diversification is ensured by the platform itself, which collects money from different lenders and, each time a loan is approved, divides the lenders' money among many different loans.

One of the most delicate and fundamental steps of the process is the assignment of ratings to projects, which must be correct and reliable. Normally this process is carried out by the platform, which evaluates each project, selects the rating and, in the end, assigns a certain interest rate. Generally, to support the crowd in selecting investments, after the due diligence process, the degree of risk is displayed on the website so that investors can select the options most in line with their risk profile. Investors usually distribute their capital by financing small portions of different projects, with the aim of receiving constant returns over time and by distributing their capital among potentially unrelated projects, thus decreasing the risk.

Given its many advantages, lending-based crowdfunding has experienced rapid growth in recent years, particularly as an alternative to lending by banks. To date, this model undoubtedly represents the most widespread crowdinvesting practice. However, its size is still too small to pose a real threat to traditional methods. Furthermore, we must consider that the banking system is currently highly regulated, while for Peer-to-Peer there are less strict constraints.

The nature of the issuer and the lender represent the factors that lead to the distinction of the type of platforms. In particular, based on these characteristics, three models can be identified:

- Micro-lending model: the crowdfunding platform is totally the micro-lending model. Financing is raised by a local intermediary, which provides credit to various customers, generally represented by low-income people, including simple consumers and self-employed workers.

- Peer-to-peer lending or social lending model: Peer-to-peer lending gives you the ability to access a sum of money that come from individuals. Macchiavello (2013), defines peer-to-peer lending (P2P) or social lending as "credit (usually of a limited amount) to a specific subject, deriving from the collection of small sums made available by countless different people, but such, taken as a whole, as to be more than useful for financing a project ". It is based on the creation of a community where the interaction between those who need a loan and those who offer their willingness to lend can take place without resorting to intermediaries, thus obtaining better conditions for both.
- Peer-to-business model: P2B platforms allow companies to find loans from many different people and enable investors to obtain better returns by eliminating the costs and complexity of the banking world, but also to spread the risk by lending to many companies. Due to limited regulations in many countries, platforms with peer-to business models are not widely spread across the globe.

Royalty-Based Model

In the royalty-based model, investors receive a portion of the profits that the financed firm will earn, in exchange for the loans disbursed. In this model we usually find projects strictly related to the creation of a discreet product and not a long-term activity: music albums, tours or mobile applications are frequent examples. In this case, the entrepreneur is willing to give up part of the future profits without having to change the ownership structure of the company, thus also maintaining full decision-making power. Compared to the crowdfunding models already dealt with, therefore, investors will not result in debtholders or owners of corporate capital. Obviously, this solution places the entrepreneur in front of a trade-off: while in fact remaining in full control of the company, he risks finding himself in the event of a very successful project, with a highly limited profitability by agreements with investors, eroding the profit margins. Following this reasoning, we can easily understand the major disadvantage of this model: if the project were to fail or in any case not very profitable, there would not be enough profit to be shared among the investors. Increased transaction costs should also be taken into account when the number of supporters in the crowd grows significantly. To ensure transparency, the founders keep investors updated during the development of the project.

According to Beaulieu et al. (2015), this type of crowdfunding differs from Equity Crowdfunding in two respects. The first is the different risk profile, lower than in the case of royalties given the modest amounts invested. The second is the use by the company of the raised capital: while in royalty-based crowdfunding the campaigns are used to finance specific projects, in the one based on equity the investors finance the entire company and help develop the business.

Donation-Based Crowdfunding

In donation-based crowdfunding, the crowd is involved in a campaign through the donation of capital which, however, is not invested, but rather honoured without expecting any reward (Bannerman, 2013). The reasons that explain this phenomenon are often related to philanthropic, social or civil actions, often based on an ecological, humanitarian or political background. (Mollick, 2014; Shneor and Vik, 2020). When in the previous paragraphs we talked about emotional involvement, we referred to this model, which differs from all those seen previously. Despite this, it is not uncommon to find initiatives that offer a symbolic reward. Among the most common examples we can find honourable mentions where the company in question decides to reward the donator with a symbolic item such as a trophy or a plate.

The main advantages of this model are to be attributed to the beneficiary who, receiving a donation, does not have to compensate the participants in the campaign with any reward. Furthermore, through the platform, both the donor and the beneficiary can formalize the joint support of the donated amount (Jenik et al., 2017). This fundraising method is less expensive than the others, for example by breaking down geographical barriers. In this sense, in fact, these campaigns are often supported by the use of social networks to reach a wide audience (Mas and Gitau, 2014). Many benefits correspond to as many risks: first of all, for the donor, who risks to get involved in fraud, for example, by financing a bogus project. This risk increases exponentially when the campaigns are managed by individuals: in fact, in the case of public companies, such as charities, there are registers to be registered with and which specify minimum requirements (e.g., disclosure of financial statements). Another risk that occurs more rarely is that of participating in campaigns for the purpose of money laundering. Donation-based crowdfunding can be divided into two different sub-categories (Vargas et al., 2015):

- Personal campaigns, which often arise from the initiative of an individual, a family or a small circle of individuals and whose purpose is exclusively personal interests. Typical examples are funding for medical care, education, or personal hobbies.
- Fundraising for charities.

In both cases, campaigns can be created following the "all or nothing" or "keep what you collect" model. Given the low affinity of these campaigns with the financial objectives that often move investors towards crowdfunding, it is therefore important to define a reasonable and proportional amount when considering this design approach.

Reward-Based Model

The reward-based model is the most developed and exploited form of crowdfunding to date (Mollick, 2014). In these campaigns, investors are offered a reward or reward that is never linked to interest or rights to remuneration on future profits; therefore investors do not join the company and are in no way dependent on its performance once the campaign ends. In most cases this model is used when you want to launch a new product on the market, so investors are actually simple customers who buy a product, usually a book, a board game or a new software (Hemer, 2011). The range of rewards is often vast and is not limited to a standard product: based on the amount paid, it is possible to obtain premium versions (Mitra, 2012; Dushnitsky and Zunino, 2018). These can range from a simple "thank you note" to a limited edition version of the product. In most cases, this type of crowdfunding is used as a real marketing tool and rather than as a source for raising capital (Sayedi and Baghaie, 2018) This is due in particular to the characteristics of the campaigns: usually in fact the total collection target of the campaign is never high but proportionally the price to participate is not cheap. This gives the producers credibility and underlines their competence. The success of this model also derives from the intrinsic behaviour of investors, who often participate in campaigns also for social reasons, such as creating direct contact with the inventor, to obtain preferential access to updates, direct communication and invention (early adopter status) (Schwienbacher and Larralde, 2010).

In this model, the beneficiaries obtain capital by having to incur significantly lower costs than traditional sources. Furthermore, this model implicitly offers the possibility of differentiating and targeting customers, monetizing assets or technological innovations.

The main risk of this type of crowdfunding is the excessive optimism that often characterizes both parties: too high expectations on the results can lead to incorrect forecasts. For example, given the lack of experience of producers, problems often arise both in meeting delivery dates and in guaranteeing product quality, usually due to logistical hitches. Having then to disclose one's invention on a public platform, we often witness phenomena of unfair competition or imitation, which create problems regarding the protection of intellectual property (Jenik et al., 2017). Finally, the trade-off faced by entrepreneurs who opt for this model must be taken into account. On the one hand the maximization of profit and on the other hand the maximization of the capital increase. It is often useful to lower the price to attract as many customers as possible, thus maximizing the user base and capital, but in this way the margin on the single product is limited and consequently the final product. Analysing the negative consequences that can arise from this practice, it is interesting to consider the contribution provided by Belleflamme et al. (2010). The biggest risk is represented by the behaviour of producers, who in order to attract a greater number of customers may decide to lower the price of their products below the optimal threshold. In this way, a "war to the bottom" mechanism would be created which would damage the entire profitability of reward-based crowdfunding in the long term.

The analysis of this risk introduces the fundamental characteristics that all successful campaigns have in common: trust. Trust management plays a central role in this mechanism, significantly impacting the potential of each campaign (Zheng et al., 2016). As the authors suggest, there are two main sources to consider when building trust:

- The story of the founder. Potential contributors are more eager to trust and give their money to someone who already has a track record in the world of entrepreneurship.
- The relationship that the entrepreneur can build with his financiers. Prototypes, videos, images, but above all comments and answers that the entrepreneur is willing to release for the public, are determining factors for obtaining credibility with investors.

2.1.5 Influencing Factors in the Crowdfunding Ecosystem

The ecosystem that crowdfunding represents is truly complex. When an entrepreneur decides to finance his company following one of the models we have seen in the previous paragraphs, he must take into consideration a series of factors that can significantly influence the final result. In this regard, Schwienbacher and Larralde (2010) have suggested six main factors that every entrepreneur must absolutely not overlook when dealing with this practice.

Risk, Information Asymmetry and Moral Hazard

The entrepreneur's risk aversion (or appetite, as the case may be) is crucial. As stated by Ross (2012), following the pattern of the principal-agent problem, managers take risks, but shareholders are the ones who actually bear them (Short, 1994). Equity financing allows risk to be spread across different people, while debt financing focuses the risk solely on the entrepreneur. Therefore, depending on the entrepreneur's risk appetite or aversion, the entire financial structure of the company will also change.

Parallel to the risk, a significant argument is the information asymmetry, or the different availability of information between the parties completing the transaction (Myers and Majluf, 1984). To obtain a perfect symmetry of information, the agent must be perfectly monitored and, in this case, the moral hazard problem is also solved. However, intensive monitoring is almost always very expensive, or even concretely unachievable. Often in fact, given the fragmentation of shareholders, who as individual actors find themselves isolated from each other, does not allow or in any case complicates the possibility of collective monitoring which is obviously simpler and less expensive than monitoring carried out by a single individual. Furthermore, small shareholders are often passive and tend to do business with larger shareholders. Crowd investors are in most cases non-professional investors and have access to less information about the industry and the entrepreneur's past activities. In addition to this, considerable intellectual ability is required to interpret the information they possess, which not everyone possesses.

It cannot be excluded that the entrepreneur himself is often reluctant towards the idea of divulging all the necessary information, to avoid suffering mechanisms of theft of ideas.

However, not all investors require full disclosure from borrowers: equity investors generally ask for more information than debt holders as they are exposed to greater risk. In this sense it is useful to cite the studies of Ueda (2004) who points out that in the norm entrepreneurs exploit intellectual property rights to protect their ideas, before appealing, for example, to VCs.

The last problem of this type is moral hazard, which we can find within crowdfunding in various forms. The main mechanism that is adopted to counter this problem is the organization by the entrepreneur of the raising of capital in different rounds. In this way, the investors can evaluate from time to time the achievement of intermediate objectives, collect further information and analyse the progress of the company, deciding whether to provide additional funds or not (Bergemann and Hege, 1998).

Lack of Pre-Existing Resources

The second point concerns the pre-existing resources of the entrepreneur. In particular, this term means both the ability of entrepreneurs to secure the investments made by fund providers, and the ability to manage the project presented and carry it out successfully. Equity investors (mainly venture capital funds, business angels and incubators) already have experience in managing a company and a previous knowledge of the sector's skills for this they are useful not only for the financing itself but also for their set of skills.

In this sense they are able to provide managerial support in sales as well as in marketing, accounting and distribution. As research has shown, innovative companies benefiting from external support from VC funds perform better and have higher growth rates than the average of other companies (Keuschnigg, 2004; Bottazzi et al., 2002). In this sense we hear about "stupid money", or the capital deriving from other investors, such as debt institutions, which limits itself to financing the entrepreneur without providing any support from a strategic point of view. The requirements of collateral, which we often see required when an entrepreneur seeks debt financing, represent another factor to be taken into consideration. In fact, Ueda (2004) stresses that companies with limited guarantees certainly have a better chance of obtaining loans from institutions such as VCs rather than banks.

Organisational Form

One of the drivers on which the success of a crowdfunding campaign depends is certainly the organizational form of a company. Through this, it is, in fact, possible to deepen different aspects concerning the commitments that the company decides to take, such as the research of high quality in the products / services offered. Schwienbacher and Larralde (2010) suggest within their research that there is a substantial difference, in terms of success within the crowdfunding world, between non-profit organizations (which have a higher success rate) and the others. This phenomenon can be explained by noting that in the norm, for-profit organizations set a precise quality-quantity ratio, with the idea of maximizing the final profit. On the contrary, non-profit organizations do not aim to maximize profit, thus being able to focus more on quality, an essential requirement for attracting donations (Glaeser and Shleifer, 2001).

Control Preferences

Within the literature, great importance is given to the topic that deals with potential conflicts of interest between shareholders (principal) and managers (agents).

Several authors have wanted to give their own interpretation of this phenomenon, such as Thomsen and Pedersen (2000) who have shown how owners focus on maximizing profit to increase returns, or Czarnitzki and Kraft (2012) who have focused on objectives of managers, more related to the creation of value given their risk aversion.

Are there any contracts that can solve these problems? If so, how? The first question could be answered that they exist, but they do not completely solve these problems, given the inconsistency between the different solutions proposed. Let's consider this example: to untie the manager from the risk of the project, it must be given to him a fixed salary. On the other hand, in order to solve the problems of consumption and necessary effort, all the costs of a reduced effort and consumption should be imposed on the entrepreneur. Hence, the optimal contract would be to make the manager the residual applicant. We, therefore, realize that the optimal pay is a mix of fixed pay and incentive plans. Ownership and control are always separated when we talk about the contracts entered into by venture capital funds (Hellmann, 1998). However, this is not feasible when the entrepreneur interfaces with the crowd, as it would require an advanced contract.

A further point to take into consideration concerns the involvement of investors in the strategic decision-making process of the company. When we talk about the crowd (crowdinvestors), we often refer to a large group, in which each member contributes a modest sum of money to the financing of the company. For this reason, unlike a case with a single large investor, easily integrated into the decision-making process, this situation is not considered manageable.

However, when the crowd gets a central and active role, it is important to extend the classic organizational models in two different directions: first of all, to enrich the set of actions available to consumers (who can think of becoming real investors instead of only customers); then take into account the motivations of these customers / investors, who will not necessarily have to follow exclusively the maximization of profit, thus being able to adjust the corporate objective function (Schwienbacher and Larralde, 2010).

Targets Imposed by Entrepreneurs

Another factor is the amount of funds needed.

Each investor has his own predefined amount that he is willing to invest in a project of his interest. For example, VCs and business angels do not operate in the same way: the former generally have very high minimum investment thresholds, which do not match the needs and characteristics of small businesses, which in fact have more luck in receiving investments from the latter (Bhide, 1992). This causes a trade-off since the difference in the amount to be financed involves different types of investors (Schwienbacher, 2007).

The macroeconomic conditions of the environment also have a profound impact on small business finance, especially in terms of market forecasts, stock market strength, general economic health and monetary policy. In this regard, the dot-com bubble in the early 2000s heavily penalized the creation of start-ups and more generally of innovative initiatives, which decreased by 38%. In addition to entrepreneurs, economic depressions also affect investors, who modify their behaviour based on the situation in which they find themselves: it is not uncommon for Business Angels or VCs to adjust their investment thresholds based on the environment in which they find themselves.

“Wisdom of The Crowd”

Entrepreneurs can request external support from investors both to run their business and evaluate the economic potential of their product. This mechanism is now well established when it comes to VCs or business angels, who possess the right skills and competences to be able to support the entrepreneur in the strategic and decision-making process, but it is not at all obvious when we talk about the crowd, which often does not have any specific knowledge of the sector. On the contrary, however, when we talk about the "wisdom of the crowd", it is understood that in some cases, the opposite might occur, that is to obtain more support and a better decision-making process by involving the crowd rather than leaving everything in the hands of a single individual or a team.

Surowiecki (2004) was the first author who analysed this concept, stating that within a large and heterogeneous group, the mix of judgments obtained is more effective than the one from a single competent individual. According to the author, the superiority of the decisions taken by a vase group would be of an intellectual type and the benefits with respect to the individual are to be sought especially in the long term. An additional advantage is that the crowd can turn into consumers and if they participate in the company's profits, they will have a natural incentive to advertise the products they buy. Instead, in the case of a single investor, or a close circle, this benefit would be completely unattainable and, having to resort to important promotion and advertising campaigns, the costs for the entrepreneur would increase. The term “wisdom of the crowd” is also intended to underline an approval mechanism (quality signalling) that occurs between the creator of the project and the crowdfunder at the time of the investment (Mollick and Nanda, 2015). At this point the question to be answered is: how does the crowd gather its wisdom? According to the literature, this process is facilitated by the social networks of both the entrepreneur and the investor (Alexy et al., 2012; Colombo et al., 2015; Ter Wal et al., 2016). In general, 4 different factors have been identified that can demonstrate the superiority of a decision made by the crowd over that made by a single one.

1. The presence of different opinions: the information comes from each member of the crowd, who adds his or her private information baggage to the common one, thus making the decision superior over time because that decision includes many more variables.

2. Independence: in the case of a single member, the opinion does not depend on that of others.

3. Decentralization: the crowd is almost never concentrated in a single geographic region, but much more often fragmented. In this way, each individual can enrich the general baggage by exploiting his different culture.

4. The presence of a mechanism that is implemented to aggregate all the different opinions of the crowd providing a single result.

A further benefit that could characterize the “wisdom of crowds” theory is its ability to overcome the information asymmetry, discussed above, which represents one of the main problems within the crowdfunding ecosystem. The information used by the crowd is always connected to the projects it participates in and is usually heterogeneous.

For this reason, the "wisdom of the crowds" is a factor that entrepreneurs must take into account above all because if used in the right way, it represents an advantage. This concept represents how a crowdfunding campaign works. In particular, since the crowd is mostly made up of non-professional investors, it is possible to associate the appreciation of the crowd with the general appreciation of targeted customers. In this sense, it represents an excellent proxy that the entrepreneur must analyse to obtain information on the validity of his product or service. Following this reasoning we understand one of the potentials of crowdfunding, which allows entrepreneurs to evaluate the goodness and potential of their ideas directly on potential customers, who also directly finance the creation of the products themselves. If a crowdfunding campaign is successful, it is very likely that the product, service or project on which it was created will then have the same success for mass customers, or in the worst case, however, it will still have been useful for segmenting the market and understanding its needs.

2.2 Equity Crowdfunding

If the previous section was limited to the general description of the different types of crowdfunding, the analysis must continue and increase its level of detail, paying particular attention to the characteristics of Equity Crowdfunding. According to the definition given by Ahlers et al. (2013) "Equity Crowdfunding is a method of financing whereby an entrepreneur sells equity or equity-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms" has the potential to represent a new tool capable of leading to the disintermediation of the equity capital market, creating a new paradigm in which entrepreneurs and lenders come into contact directly, without the need to hire a subscriber. Given the difficulty of companies in obtaining financing in their initial stages of life, due to the few guarantees available and the consequent risk, but also to the great need for capital, this method has gained more and more visibility and importance in recent times (Kerr and Nanda, 2011).

2.2.1 Definition of Equity Crowdfunding

Bradford (2012) is the first author to try to coin a definition of Equity Crowdfunding. In his article, the author defines this tool as "a model in which lenders receive an interest in the form of equity agreements or similar (e.g., profit sharing) in the initiatives they finance." In parallel Belleflamme et al. (2012) analyse the main difference between Equity Crowdfunding and traditional sources of capital, underlining how this is primarily represented by the financing process: in Equity Crowdfunding, entrepreneurs create campaigns on the platform that are open to everyone and the investors, relying on the information provided, decide whether to participate. The platform, fundamental in this process, automatically creates a standardized investment contract and regulates payments, making the financing process possible. Compared to other players in the world of capital offering, such as VCs or business angels, individual investments in Equity Crowdfunding are much lower. Based on these two different considerations, the definition of crowdfunding by Ahlers and Cumming, already mentioned in the introduction of this chapter, was created. Reward-based campaigns remain the most widespread crowdfunding method to date, but those based on equity are rapidly growing in importance (Cordova et al., 2015) also thanks to its ability to tickle the attention of the

media and politicians, like when Obama included crowdfunding in the JOBS Act of 2012. The main advantage of this model, similar to the more traditional forms of investment in SMEs (i.e., business angels and venture capitalist funds), is the help given by its platforms to the creation and support of highly innovative initiatives, potentially making crowdfunding a relevant contribution to innovation and its consequences, such as employment or the growth of the entire economy.

2.2.2 Dynamics of Equity Crowdfunding

Within the process that completes an Equity Crowdfunding campaign, three types of actors play a fundamental role: the entrepreneurs who promote the financing campaign, the investors who provide the required capital and the Equity Crowdfunding platform, which carries out the role of intermediary. Each actor plays a central role within the different stages that describe this process. The image below (figure 1) shows and briefly summarizes all the steps required to run an Equity Crowdfunding campaign.



Figure 1: The stages of Equity Crowdfunding (Collins and Pierrakis, 2012)

The first phase of the process consists in the presentation of the financing proposal by the company (or entrepreneur) to the Equity Crowdfunding platform. At this point follows a careful evaluation, by the platform, of the company that has proposed itself. Specifically, the control that the platform carries out on the company initially focuses on factors characterizing its business, such as the search for certain factors or signals that indicate that the company may be fraudulent, the company's suitability for crowdfunding and reputation of the entrepreneurs who are in charge of it (Giudici, 2015). The result of these analyses acts as a discriminant for access to the platform: if the company is suitable it is published on the platform, otherwise its proposal is rejected. These analyses are not done at a standard time but may vary from platform to platform.

The Crowdcube in Exeter for example, famous for its high rejection rate of around 75%, performs beforehand vetting (Collins and Pierrakis, 2012). Other platforms such as the Dutch one called Symbid, on the contrary, wait for the company to have collected the target capital within the campaign and at that moment they perform their own due diligence, before releasing the collected sum to the company. For this reason, obviously not all platforms have the same rejection rate. The corporate pitch is published on the platform only after acceptance of the financing proposal. From that moment it becomes public and any investor can decide to view it. Usually, the most common pitches are videos or written texts, which aim to describe the company and its product, service or project, providing all the information required by potential investors to evaluate the profitability of an investment in the company. The key points that cannot be missing from a pitch are the business model, the presentation of the team and the related training and professional experiences, the amount of capital that is needed and the purpose that you want to achieve. The Italian legislation formalized by CONSOB is rather strict with regard to the information that must be provided, but this topic will be further explored later. Among the information provided with the presentation of the offer, the information relating to the number and type of shares offered cannot be missing. In particular, it is necessary to specify both the quantity of shares made available and the different investment ranges relating to the different types of shares (such as voting and non-voting). During the promotion of the Equity Crowdfunding campaign, the entrepreneur plays a fundamental role especially with regard to marketing. In fact, despite the fact that his proposal is online in all respects, it is not possible to hope to rely solely on those investors who, browsing the platform, notice the proposal and are interested in it, but in addition

one must try to market one's project even outside the platform, spreading the message. Within the literature we can find several studies that have demonstrated the importance of investments by family and friends (F&F) (Agrawal et al., 2011) as well as the explanation of the crucial role played by early stage investors on the success of the financing project. (Vismara, 2016). The entrepreneur must therefore promote his campaign in the most effective way possible, using all the technological means at his disposal to try to reach the largest possible number of interested people, in order to exponentially increase the circle of possible investors. Equity Crowdfunding campaigns, which involve an exchange of shares and capital, do not end with the achievement of the target, but create a link between entrepreneur and investor that continues over time. For this reason, it is important that the founder keeps the relationship with the investor alive by providing periodic updates on the progress of the loan or by answering any questions that are asked.

At the beginning of the financing process, the time horizon during which the pitch will be promoted on the Equity Crowdfunding platform is also decided. Also in this case there is no single solution, but there are platforms that set a standard "financing window", others set a maximum limit for the duration. Once the time available for the promotion of the Equity Crowdfunding campaign is over, it is necessary to evaluate the outcome. This depends primarily on the type of campaign being analysed. In the presence of an "all or nothing" campaign, which is the most widespread within Equity Crowdfunding, a comparison is made between the capital raised and the target capital set: if the two values coincide, the campaign is considered successful and the funds are released to the company while otherwise all the capital raised is returned to the investors and the company does not obtain any financing. If, on the other hand, the campaign is not of this type, the capital raised, regardless of whether the target is reached or not, is paid to the company. This type of campaign is less used especially due to the risk perceived by investors, who in the case of a collection much lower than expected, would find themselves with capital invested in a business project that could immediately encounter severe difficulties.

The transfer of money at the end of the campaign involves the presence of an escrow account, independent of both the investor and the founder, in which, in the event of success, the investment is maintained until the total objective is reached or, if not, returned to the investor.

Once the campaign is over, the role of the investor can remain central and active towards the decisions taken by the company. In particular, this depends on some factors, such as

the characteristics of the platform used or the type of shares offered by the company, which in some cases provide voting rights. There are some Equity Crowdfunding platforms that manage a nominee and management system capable of representing the interest of investors with the business. In other cases, however, the entrepreneur can manage his own interests, while the investor is presented with the possibility of choosing between remaining passive or being involved in the business. In the event that the company has provided voting rights, the investors automatically acquire an active role, as they can participate in the shareholders' meetings and exercise their decision-making power on the strategic decisions of the company that will arise.

2.2.3 Risks and Consequences of Equity Crowdfunding

Launching a crowdfunding campaign is not limited exclusively to creating the process described in the previous chapter, but this mechanism has implications that cannot be overlooked. In this chapter, we will provide an overview of the risks arising from these activities and their consequences for the parties involved, namely fundraisers, investors and platform providers. This topic will also represent the starting point for developing the issue of Equity Crowdfunding regulation in the following chapters.

When a young company, called start-up, is selected for an investment, it has a significantly higher risk profile than a mature company. In fact, in a start-up “practically all important decisions (...) remain to be made, and most of the significant uncertainties about the outcome of the firm's efforts remain unresolved” (Gilson, 2003); in addition to these issues, information on the quality of management and the high-tech environment in which they operate is almost always scarce. Speaking in detail about crowdfunding, three main categories of risks have been identified: risks associated with the issuer, risks associated with investors and risks associated with the platform (Hu, 2015).

The risks relating to the issuer are intrinsic to the nature of the initiatives financed and refer to its ability to generate value as well as to create a successful project (illiquidity risk).

Regarding investor risks, the crowd could “be adversely affected by misleading claims, made intentionally or honestly, and less able to correctly assess the company's present and future performance value” (Hu, 2015). Partly included in this category, there are two other risks: insufficient protection of shareholders which could lead to the dilution of their

shares or exclusion from exit opportunities, and the difficulty in monitoring the progress of the start-up, caused by the lack of information and the involvement of the collective. The last category is platform-related risks that arise from the incentives a platform provider might have to deviate from morally fair behaviour towards investors or fundraisers. The main phenomena that create threats for the actors of the crowdfunding ecosystem will be analysed in more detail below.

Setting Valuations

One of the main factors to consider for the entrepreneur, even before launching the Equity Crowdfunding campaign on the platform, is represented by the percentage of equity allocated to investors in exchange for the required capital. This depends primarily on the valuation of the company, which is carried out by the founding members. A mistake in assessment could prove fatal, both for the success of the financing campaign itself and for the continuation of the business. Everything becomes even more delicate considering that estimating the value of a company, especially if it has been recently created, is not a simple task at all (Zacharakis and Meyer, 2000), mainly due to two factors: the prevalence of intangible assets and the obligation to base estimates on forecasts rather than historical data, which are risky and easily influenced by variables such as future market size, competition or new market entrants.

Within Equity Crowdfunding platforms, the most widespread practice is to allow entrepreneurs to set their own valuation of the company, based on how they perceive the value of the business. There are also other cases in which the platform allows upward flexibility: the company is not bound to a fixed percentage, but can decide, if it deems it appropriate, to change the percentage of equity offered to investors, even after the start of the campaign. Through this method, a fair offer is guaranteed as if the founder realizes that the investment rate is not sufficient to reach the target capital, he can possibly increase the equity offered in order to stimulate investors. This increase is not always due to an entrepreneur's initiative but may depend on feedback that indicates a company evaluation that is too optimistic. In the case of a capital increase offered, the change is considered retroactive, in the sense that it also involves the investors who took part in the campaign before the change, thus also increasing their shareholding.

There is an alternative method for setting a firm's valuation called a market-driven approach. First of all, the entrepreneur sets the target he wants to get from the campaign and the number of shares he is willing to sell. From here, investors enter the scene and make offers for the shares that are assigned to those who are willing to pay the most. The literature on auction theory, however, has shown that this type is not convenient for investors, who due to this upward bidding mechanism end up paying an excessive price compared to what they would normally be willing to pay (Thaler 1988). Equity Crowdfunding platforms themselves offer solutions to try to minimize misjudgement by companies by offering coaching to entrepreneurs on valuation methods, especially through the support of investment-bankers, fund managers and venture capitalists. There are also platforms that allow the entrepreneur to look for other companies similar to his, to make a comparison on the assessments made and understand the goodness of his estimate.

Whatever the path taken, the literature has shown how it is essential to guarantee upward flexibility in the valuation of companies (Collins and Pierrakis, 2012), to facilitate the achievement of equity and the subsequent success of the Equity Crowdfunding campaign. On the other hand, for the entrepreneur a too high percentage of capital offered would have potential negative effects which should not be overlooked. Some examples could be negative signals about the commitment of the entrepreneurial team or additional difficulties in obtaining subsequent financing.

Selection of Commercial Activities and Detection of Possible Fraud

The problem that is most discussed and which is often highlighted by those who oppose the ease of regulation of Equity Crowdfunding is the risk of fraudulent behaviour. This term aims to summarize the phenomenon in which the capital raised through the crowdfunding platform is destined for an entrepreneur who in reality has no intention of creating a profitable business. This is a problem that refers to the phenomenon of moral hazard, dealt with in section 2.1.5, but fortunately the literature has identified various safeguards to combat it.

The vetting carried out by Equity Crowdfunding platforms during the evaluation of the received financing proposals undoubtedly represents the first protection to be applied. By

necessity, the platform must carry out some form of due diligence to identify the quality of the business project, in order to screen the projects with greater potential from the others. This now represents a real competitive advantage for Equity Crowdfunding platforms, given the growing number of competitors in this field. In particular, the ability to understand the quality of a company and identify potential frauds reassures and encourages investors to choose one platform over another.

Another possible protection against fraud is represented by the “all or nothing” mechanism, already widely presented, according to which the campaign achieves a positive outcome only if all the predetermined target capital is reached. In fact, in this type of campaign, success depends on funding from many small investors and the probability that some of them detect a fraudulent business project is greater than in the case of a few large investors. However, if the entrepreneur fully relies on the control carried out by the crowdfunding platform and the latter does not provide the possibility to create discussions about the goodness of the campaign in question (for example through a forum), this mode of protection against fraud it could lose value. Another possible solution to avoid this moral hazard problem is the introduction of a staggered release of funds linked to milestones. Following this approach, the capital raised from investor loans is not entirely released to the company, but is staggered into several successive phases, which only take place if the planning to complete the entrepreneurial project is respected. This solution is not one of the most used, also because of the possible problems it can generate. First of all, from a regulatory point of view, the platform would be obliged to keep the capital raised for a longer period of time than normal. Subsequently, from an administrative point of view, the control of the project, to verify the actual achievement of the predetermined stages, would be the responsibility of the platform.

In the last period, the proposed solutions have been accompanied by the use of social media, which represent an innovative and extremely valuable solution for the detection of frauds and the selection of quality companies. In fact, investors are facilitated in assessing the reliability of entrepreneurs and creditworthiness thanks to the incredible amount of information available on these sources. Thanks to social media it is also possible to directly evaluate the founders of the company, studying their skills and competences, and then assessing their adequacy to complete the project proposed in the

countryside. For these reasons, this solution is complete and effective and its usefulness grows with the passage of time, given the continuous increase of information that circulates within social media.

2.2.4 Equity Crowdfunding and Traditional Finance

Equity Crowdfunding, a capital raising tool for start-ups, represents an alternative channel to those typical of traditional entrepreneurial finance: family and friends, business angels and venture capitalists. Within this chapter, Equity Crowdfunding will be related to the world of traditional financing instruments, trying to highlight the differences and the relationship between the different instruments.

An Unbridgeable Gap or An Opportunity?

When a company, in the early stages of its life, finds itself forced to seek financing, it can basically take two different paths: choosing to finance itself through risk securities or through debt securities. However, the latter are not always available, as “traditional debt markets are mainly designed to finance material assets that have well-defined market prices and can act as collateral” (Wilson and Silva, 2013). Young companies often do not fall into the category suitable for obtaining capital through debt, as they are characterized by a common difficulty in generating continuous cash flows (and consequently the difficulty in repaying interest on the debt) and are often not in a position to be able to provide adequate guarantees. If we focus on innovative start-ups, the discourse does not change: in fact “insufficient guarantees can in particular limit access to external financing for companies that depend heavily on knowledge-based capital investments (KBC), such as R&D, design or business models” (Wilson and Silva, 2013).

These problems, which are common to most start-ups, limit the possibility of using traditional financing instruments, thus forcing new businesses to use risk instruments, in particular equity. The very first source of funding for any business is friends and family (F&F), or in the case of wealthy entrepreneurs, also personal savings. Obviously the capital deriving from these channels is contained and limited; for this reason they do not constitute an available and reliable form of financing for expensive or long-term projects.

In some cases these first financing channels are not even used, in fact the social class of F&F and the wealth of the entrepreneur do not always allow it.

Due to these limitations it is immediately clear how vital it is to have other financing instruments available. Unfortunately, “traditional sources of venture capital, business angels and venture capitalists, have shifted their investment business further upstream in recent years, making larger investments in more developed companies. Many angels tend to only consider companies looking to raise larger amounts (...). Venture capitalists have largely left the early stage space, with the ratio of transaction costs to investment size for small businesses less and less suited to their business model” (Collins & Pierrakis, 2012). The thinking of these authors also provides an interpretation of the positioning of Equity Crowdfunding with respect to traditional channels (Figure 2) and an additional hypothesis that goes well with the objectives of this paper. First of all, Equity Crowdfunding could present itself in the world of financing as a possible substitute for F&F, thus obtaining a central role in seed money to start the business when the capital deriving from other instruments is limited or absent.

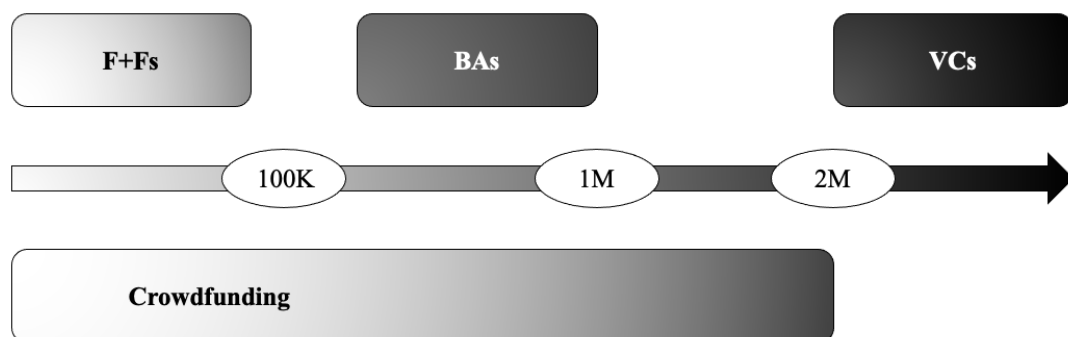


Figure 2: Investment size and stage positioning (Collins and Pierrakis, 2012)

Secondly, Equity Crowdfunding could also play a relevant role as in the equity investment scenario there is a "no man's land", represented by investments that do not have the right size to attract business angels and venture capitalists. The creation of scenarios in which traditional methods and Equity Crowdfunding can complement each other cannot be excluded. In this regard Hornuf and Schwienbacher (2016) stated that “an advantage is that the crowd can rely on the financial negotiation and monitoring skills of the business angels, who also provide practical advice and lend their reputation to the entrepreneurial

enterprise. Business angels could in turn benefit from crowd participation which could complement what angel investors can contribute. Furthermore, the wisdom of the crowd can reveal new information for the benefit of traditional investors”.

In addition to the size and the investment phase, it is useful to focus on risk appetite. In this case the discourse is similar to the previous one: Equity Crowdfunding has the characteristics suitable to fill the existing gap, occupying a different position from traditional sources of financing. In fact, BAs and VCs are generally attracted to investments that are characterized by a very high risk and a potentially exponential return, unlike banks that seek stable situations, in which the risk is very low and the cash flows resulting from the investment is modest but constant. Clearly it is difficult to place start-ups in one of these two categories, as their risk is medium-high while the potential returns are good, but certainly not exponential (except for very rare cases). In addition to this, there is the uncertainty regarding future performances, which are never supported by historical data and therefore are never considered safe. The combination of these characteristics means that traditional sources of financing neglect the world of start-ups, which occupies a central position among the attractive projects for banks and large investors (Figure 3).

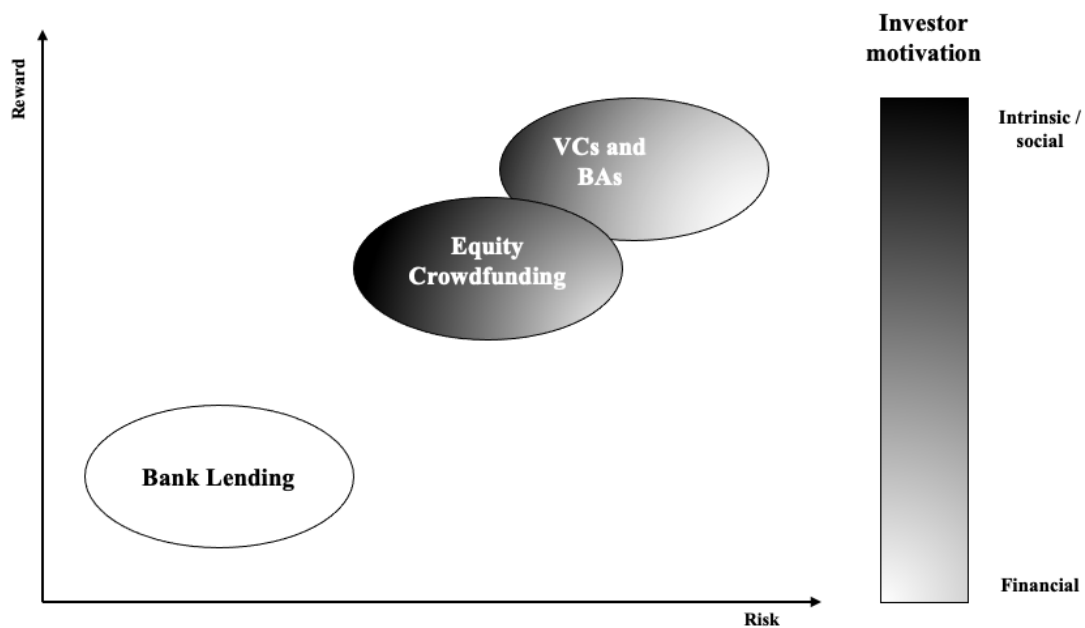


Figure 3: Risk-reward positioning (Collins and Pierrakis, 2012)

This situation represents the most relevant market opportunity for Equity Crowdfunding, which can be found as the main financing instrument for all those companies that reflect this risk-return profile. Carrying out campaigns to fill this specific niche is an interesting hypothesis, which also finds support in the literature: in fact, "unlike venture capital and angel investments, Equity Crowdfunding requires entrepreneurs to publicly disclose their idea and business strategy. This early disclosure of information could be detrimental to companies with an innovative business model that can be easily imitated. (...) Crowdfunding could be more advantageous for start-ups that can protect their intellectual capital by means other than secrecy, or for start-ups whose business is not particularly innovative" (Wilson and Testoni, 2014). The characteristics of medium risk and medium return are aligned with those described above by the authors, especially if we consider that one of the factors that increase risk is the high level of innovation in the business, while one of those that reduces it are intellectual property rights of innovation. The financial aspects are not the only ones to consider in this analysis: it cannot be ruled out that crowdfunders have a different propensity to invest compared to traditional investors. In fact, the social benefits, which are perceived more by crowdfunders, combined with their lower evaluation capacity, could lead them to agree to invest in riskier or less profitable projects (respectively with the same return or risk) than business angels or venture capitalists. "Consistent with previous research, people are motivated to engage in crowdfunding to raise funds (...). The words that lenders use to describe transactions ("give", "get" and "buy") suggest that crowdfunding is motivated by both consumer and philanthropic behaviour "(Gerber et al., 2012). Summarizing what has been analysed, Equity Crowdfunding represents an interesting and precious source of capital as it attracts all initiatives characterized by parameters that business angels and venture capitalists do not consider in line with their requirements, both in terms of investment size and in terms of risk-return profile. This shows that Equity Crowdfunding and traditional tools do not target the same audience without excluding a potential future interaction between these tools, thanks to the interest of traditional channels to further diversify their investments and access the wisdom of the crowd.

	Equity crowdfunders	Business angels	Venture capitalists
Background	Many different backgrounds, many have no investment experience	Former entrepreneurs	Finance, consulting, some from industry
Investment approach	Investing own money	Investing own money	Managing a fund and/or investing other people's money
Investment stage	Seed and early stage	Seed and early stage	Range of seed, early and, increasingly, later stage
Investment instruments	Common shares	Common shares (regulatory restrictions)	Preferred shares
Deal flow	Through web platform	Through social networks and/or angel groups/networks	Through social networks as well as proactive outreach
Due diligence	Conducted by individual, if at all, and something by the platform	Conducted by angel investors based on their own experience	Conducted by staff in VC firm sometimes with the assistance of outside firms
Geographic proximity of investments	Investments made online: most investors are quite distant from the venture	Most investments are local (within a few hours' drive)	Invest nationally and increasingly internationally with local partners
Post investment role	Most remain passive. Some platforms represent the interest of the crowd	Active, hands on	Board seat, strategic
Return on investment and motivations	Financial return important but not the only reason for investing	Financial return important but not the main reason for investing	Financial return critical. The VC fund must provide decent returns to existing investors

Table 3: Key characteristics of equity crowdfunders, business angels and venture capitalists (Wilson, 2012)

2.2.5 Regulation

Given the presence in the crowdfunding ecosystem of various risks, which can have consequences for all the actors involved, over time an intervention by public regulators has been indispensable. The basic objective of these initiatives is to mitigate the intensity of these risks, without however undermining in any way the fundamental characteristics of this instrument, first and foremost the flexibility which together with other peculiarities represents one of the main advantages compared to traditional finance. Added to this is the national interest in crowdfunding as it supports and stimulates innovation within the various economic contexts.

The first country to introduce a regulatory framework for Equity Crowdfunding was Australia, with the creation in 2007 of the Australian Small-Scale Offerings Board (ASSOB). As pointed out by Ancev (2015) and Nehme (2018), this first attempt proved to be ineffective, mainly due to the principles applied for regulation, which were not created ad hoc for this new situation, but borrowed from those applied to traditional

instruments, which by definition have different characteristics. Given the vastness of the various regulations, which being of a national nature vary from country to country, the remainder of this section will focus on the regulations in the United States of America, United Kingdom and Italy.

United States of America

The JOBS Act (Jumpstart Our Business Startups Act), created by the government of Barack Obama in 2012, establishes the birth of the regulation on Equity Crowdfunding in the United States. The JOBS Act is made up of seven different titles, of which only the first three directly influence the crowdfunding market.

In Title I (Reopening American Capital Markets to Emerging Growth Company), the concept of emerging growth company (EGC) is defined by the regulator. An EGC is a company whose total annual turnover is less than \$ 1.07 billion, obviously considering the last completed fiscal year and, as of December 8, 2011, has not sold any common stock based on a registration statement. In the case of an IPO, the company continues to remain an EGC for the following five fiscal years unless one of the following three occurs:

- Its total gross annual revenues are \$1.07 billion or more.
- It has issued more than \$ 1 billion of non-convertible debt in the past three years.
- It becomes a "large accelerated filer" as defined in the Exchange Act Rule 12b-2 (SEC, 2020).

Once the EGC concept is precisely defined, the remainder of Title I amends the Securities Exchange Act (1934), Investor Protection and Securities Reform Act (2010) and Arbanes-Oxley Act (2002) explaining the disclosure exemptions granted. These are the rights that are granted to a company that is referred to as an EGC:

- To include less extensive narrative disclosure than is required of other reporting firms.
- To provide audited financial statements for two fiscal years rather than three years before the listing of any of its financial instruments.
- Not to provide an auditor with an internal control attestation on financial information.
- To defer compliance with certain changes in accounting principles.

Title II (Access to Capital For Job Creators), which was amended by the SEC (Securities and Exchange Commission) in 2013, waived the ban on general solicitation and general publicity for sophisticated investors (Tuomi and Harrison, 2017), defined as households that have an income of at least \$ 200,000 annually, a net worth of over \$ 1 million excluding their first home (Battisti et al., 2020). Thanks to this, it has been possible to carry out capital raising advertising campaigns also on online interaction platforms, such as the social networks Facebook or Twitter, which, as already explained, play a fundamental role in promoting crowdfunding campaigns.

With the publication by the SEC of Title III of the JOBS Act in 2015, access to crowdfunding was extended to the general public, provided that "the amount contributors can invest in a project depends on their annual income: if this is more than \$ 100,000, the lender can invest up to 10% of the revenue. If it is less than \$ 100,000, a maximum of \$ 2,000 or 5% of the revenue can be invested" (Juredieu and Mayoux, 2016). In addition, various clauses have also been included to improve the general regulation of crowdfunding and to guarantee an adequate level of protection for investors: a cap on the capital increase of 1 million dollars for a period of 12 months, a block of 1 year on newly issued shares, the ban on setting up crowdfunding campaigns for companies registered overseas and the obligation to disclose certain financial information to the SEC for campaigns over \$ 500,000 (Juredieu and Mayoux, 2016).

United Kingdom

In the United Kingdom, which represents a real unicum as regards the regulation of Equity Crowdfunding, the situation is different. The web-based Equity Crowdfunding has in fact always been regulated in the United Kingdom and the operator of any platform requires the authorization of the FCA for the activity of "organization of investment transactions" (Article 25, paragraph 1, of the Financial Services and Markets Act 2000 (Regulated Activity) Order 2001).

In essence, this tool is considered in terms of regulation as equivalent to that of traditional corporate finance companies. The only difference therefore lies in the means used to obtain the capital (Deng et al., 2018). However, the current regulatory system was formed only in 2011, with the introduction of the SEIS (Seed Enterprise Investment Scheme) and

in 2014 when the FCA (Financial Conduct Authority) opted for the creation of a new regulation for crowdfunding. Juredieu and Mayoux (2016) explained how regulators through SEIS:

- Introduced several general measures in favour of investments in small and medium-sized enterprises such as various tax provisions and compensation systems in case of loss during the transfer of shares.
- Limits on the investment that a single individual can make in a specific campaign (maximum GBP 100,000 and no more than 30% of the shares of a company).
- Criteria defined to increase the reliability of the recipients of the funds: they must be of British nationality and established in the United Kingdom. The company must employ at least 25 employees and have assets of less than GBP 200,000. In conclusion, no financing activity must be linked to the corporate purpose of the beneficiary company (Juredieu and Mayoux, 2016).

As regards the regulation intended solely for crowdfunding, it is stated that:

- The platforms that operate these transactions must necessarily be authorized by the FCA.
- The minimum capital required to enable a platform to operate as a crowdfunder is 50,000 GBP.
- The company must notify the FCA of any proven or foreseeable change in its capital within 14 days of its knowledge.
- The investment is limited to a maximum of 10% of the company assets
- The platforms must provide complete and transparent information on the risks of investing in young and unlisted companies.

Italy

The "Development Decree bis", promulgated in October 2012, sanctioned the beginning of crowdfunding regulation in Italy. With this decree (number 179) was introduced the possibility to raise capital through the Web and consequently to stimulate entrepreneurial and innovative activities within the country. The decree - amended by law no. 221 in December of the same year - amended article 30 of the TUF (Consolidated Law on Finance, which contains all the rules on financial activity and intermediation) defining three pillars as regards the Equity Crowdfunding market in Italy:

- The launch of a campaign should be carried out through web portals by entities authorized by Consob (National Commission for Companies and the Stock Exchange). The authorized subjects could be banks and other financial intermediaries who have communicated to Consob their intention to manage a crowdfunding portal and other generic subjects authorized by Consob after verifying some specific characteristics, with the further condition that these only transfer the data on orders and capital subscriptions to banks and financial intermediaries.
- Crowdfunding campaigns should be linked to the issue of shares, instruments owned by the company and should be carried out by “innovative start-ups”, the definition of which can be found in the same decree. With this term we want to identify those unlisted Italian companies - with an age of less than 4 years - which do not distribute profits and whose turnover does not exceed 5 million euros. This is not enough to fall into this category, but in addition one of the following three requirements must be met: (i) investing in research and development for at least 15% of the costs of their production value, (ii) within the company must be present or otherwise hired personnel holding a PhD or any Masters in the field of research or (iii) hold patents on inventions of industrial, biotechnological or new crop varieties (Juredieu and Mayoux, 2016).
- The maximum limit of the offer cannot exceed the amount of 8 million euros.

In 2013, with Regulation no. 18592, Consob has operationally defined, with reference to the three pillars, the operating mechanisms of the crowdfunding market. In addition to the three pillars, some additional boundaries have been created for the players in the Equity Crowdfunding industry. The most relevant follow:

- A summary of the moral and professional requirements that must be present in the platform managers to enable them to carry out that task.
- A definition of both the rules of conduct that portal operators must follow, and the minimum set of information to be provided to potential investors to ensure that the risks associated with investments are consciously understood.
- The introduction of a restriction, represented by 5% of the total investment in the campaign, which must necessarily come from professional investors or the campaign is invalidated. This manoeuvre has the precise task of automatically providing a guarantee on the quality of the issuer's project.

This reference legislation was subsequently revised and amended in 2015, with decree no. 3/2015 ("Investment Compact Decree") through which the possibility of creating Equity Crowdfunding campaigns was also given to "Innovative SMEs" (unlisted companies with less than 250 employees and € 50 million in revenues and expenses in R&D higher to 3% of the maximum between costs and turnover), to "start-ups for tourism" and finally to funds and joint-stock companies as long as their activities focus on investments in innovative start-ups or SMEs. Subsequently, with regulation no. 195220 of 2016, Consob also weakened some of the bonds previously introduced, thanks also to the collection of opinions from the protagonists of Equity Crowdfunding. In particular:

- It also included in the definition of "professional" investors serial investors such as business angels and others who required it under the MiFID regulations.
- The portals were given the opportunity to personally verify the risk related to each campaign and the possible alignment between the characteristics of the project and the entrepreneur (initially it was only granted to financial intermediaries or banks).

The same process of collecting feedback from stakeholders and consequent updating of the legislation by Consob was re-proposed in 2018 (no.20264). In this case the significant changes were:

- The creation of a minimum level of insurance protection for investors, both for participation in the campaigns and for the platform.
- The cancellation of possible conflicts of interest by defining the organizational tools adopted, especially in the cases of platform managers who raise capital through the platform itself.
- The introduction of whistleblowing policies.
- The inclusion of all SMEs among those who are allowed to carry out a crowdfunding campaign, combining them with innovative ones.
- The reduction of the minimum capital threshold invested by professional investors from 5% to 3%.

To date, no new changes have been made regarding the Italian regulation for Equity Crowdfunding and the attention of regulators has shifted towards the possibility of

offering debt instruments through Equity Crowdfunding (similar to lending platforms), an attempt that for now is not giving the desired results, due to the deregulation of the lending platforms which are therefore much more flexible.

2.2.6 The Italian Ecosystem

This section, which will complete the part of the literature review relating to Equity Crowdfunding, aims to provide an overview of the ecosystem present in Italy, with particular attention to the definition of the actors present and their role.

For this purpose, the “5th Italian Report on Crowdinvesting” report by the Entrepreneurship & Finance Observatories of the School of Management of the Politecnico di Milano (Politecnico di Milano, 2020) was used, which contains the statistics and information useful for this purpose.

The Reference Context

On 30 June 2020, € 158.9 millions of total capital (if the cumulative amount is considered) was raised through crowdfunding platforms in Italy. The data, although not disproportionate, given the still modest size of this market, is interesting if we consider the collection of 76.6 million (48% of the total) in the last 12 months before the date of the survey, which demonstrate the great growth that has characterized this last period.

The actors who are most involved in this process are presented below, with the exception of crowdfunding platforms, which will be analysed in detail in the next chapter:

- Web developers and web designers: they are responsible for defining and implementing the functional and graphic aspects of the portals and can also be consulted as outsourcer. Their contribution is relevant to the implementation of payment systems and their management, as well as the creation of data protection functions.
- Legal advisors: they play an assistive role, both for platforms and for borrowers. Their presence guarantees a correct performance of the activities required by law and a safe management of the legal risks connected to this instrument.
- Consultants: they also play an assistance role, supporting and supervising the borrowers in defining the pitch of the business plan and in the creation of

marketing plans related to the campaign. The consultants can be external actors, but often this task is carried out directly by the platform itself, through a specialized team. Independent auditors or experts are involved when the evaluation of patents, trademarks, assets or other quantifiable intangible assets is necessary.

- Insurance companies: they represent a relatively new type of players in this sector, as their presence was essential only after Consob introduced the obligation for platforms to have a repayment plan to protect investors or to subscribe an insurance policy to cover the risks deriving from transactions.
- Sector blogs: these are web portals that disseminate useful information about the aspects to be taken into consideration within Equity Crowdfunding: new campaigns, market trends and useful information for investors. Their creation derives from the great interest that this phenomenon has aroused in recent years.
- Public sector both in terms of national and local agencies.

Different Italian Platforms

In Italy, 42 Equity Crowdfunding platforms were present at 30 June 2020. This figure is particular especially when compared with the modest size of this market and with the much smaller number of platforms in other countries. Despite the vastness of choice for entrepreneurs and investors, 76% of the campaigns organized in the 12 months prior to 30 June 2020 have been entrusted to only 6 portals, so despite the many options, the market is very concentrated.

By studying two different dimensions, the level of activity of the platforms and their focus on a single or multiple sectors, it is possible to classify the platforms into different categories, as shown in Figure 4. From this analysis it can be seen that 17 out of 42 platforms are not active, probably because despite being online they are still in the launch phase or have not yet completed any campaigns. Of the remaining active platforms (25), 72% (18) do not focus on a single sector. Among these, we must face a separate discussion for two platforms that stand out from the others for some fundamental characteristics: Clubdealonline, which unlike all the others does not grant the right to access information and finance campaigns to the whole crowd, but restrict access to selected investors (for example High Net Worth Individuals and others) who must pay an annual fee to access

and participate in campaigns; Doorway, which adopts a hybrid approach, in fact the campaigns are visible to all users of the platform, but sensitive information, such as business plans or other documents, are visible only to a circle of selected investors or at most to other investors to whom they the latter decide to donate access. Given these characteristics, which are not common to other platforms, the data that will be analysed in the following part of this chapter will not take into account the two platforms, also due to the difficulty of collecting the data concerning them.

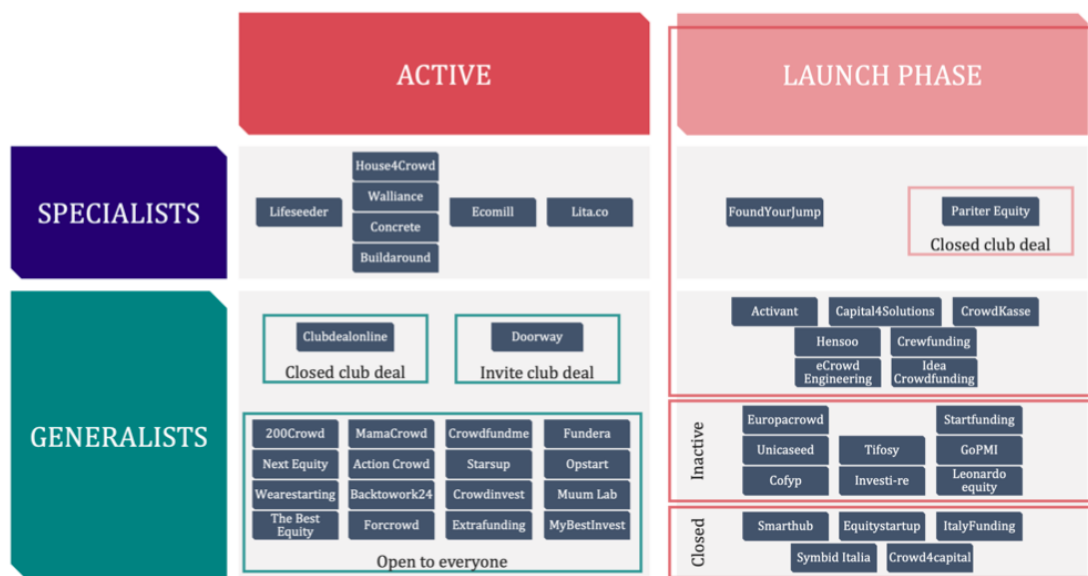


Figure 4: Italian Equity Crowdfunding Platforms Taxonomy (Politecnico di Milano, 2020)

The remaining portals, which focus on a single sector, are largely (4) intended for campaigns relating to real estate projects. Given the great diversity between the characteristics of the real estate projects (in terms of target, exit strategy and shareholder structure) and those of the other Equity Crowdfunding campaigns, they will be excluded from the rest of this section, following the same reasoning done previously with the platforms Doorway and Clubdealonline. The remaining three in this category operate in the fields of life sciences, energy / environment and impact finance. If we consider once again as the final date the 30 June 2020, the portals with the most completed campaigns are Crowdfundme, Mamacrowd and Opstart with respectively 118, 100 and 77 completed campaigns. As for the last 12 months prior to the date considered, the top step of the podium is occupied by Crowdfundme with 39 campaigns, followed by Backtowork24

with 30 and Mamacrowd with 29, it is in third place. However, Opstart wins the crown of portal with the highest capital raised in 2020 (€ 22.8 million), followed by Crowdfundme with € 17.5 million and Mamacrowd with € 14 million.

Offers Taxonomy and Useful Numbers

The result of an Equity Crowdfunding campaign is represented by a joint capital increase, which as such must necessarily be approved by a resolution. The resolutions that are most approved in the Italian market are made up of an inseparable and a separable part. Thanks to this system, if the minimum target is reached and the campaign is successful, the companies validate the result and also include any capital raised beyond the target. In general, we can find resolutions for totally separable capital increases (take-it-all model) or for completely inseparable capital increases, where if the total capital raised is higher than the target, the excess difference is rejected.

Then analysing a few numbers, to give a quantitative idea, the average target of the campaigns, if we consider the time interval from 2014 to 2020, was 192 thousand € with a decreasing trend over the years, while the median value is 100 thousand €. Consistently, the percentage of equity offered to investors has decreased over the years and currently stands at an average of 10.4% with a median value of 5.9%.

Speaking instead of the type of shares offered, in general the Italian market follows a very simple principle: below a certain investment threshold, shares without voting rights are offered, while ordinary ones can be obtained by increasing the size of the investment. This trend is quite stable if we consider the last few years, but there are exceptions.

Finally, speaking of the minimum investment, it is usually between € 100 and 1000 (frequency 87%), with a small percentage (<2%) of borrowers allowing investments of less than € 100.

Created for Start-Ups but Useful for Many Others

If we set 30 June 2020 as the reference date, the number of different companies that have used Equity Crowdfunding as a financing tool in Italy is 547. The number of campaigns

is different, however, as some companies have conducted campaigns on platforms several or more rounds on the same platform. These issuers make up the circle of subjects authorized by current legislation and are made up of different types of companies:

- 397 innovative start-ups (72% of the total).
- 51 innovative SMEs (11% of the total), admitted by the regulation from 2015 onwards.
- 70 SMEs (13% of the total), admitted by the regulation from 2017 onwards.
- 21 investment vehicles to raise funds to invest in start-ups and SMEs (4% of the total), also admitted since 2015.

The numbers change slightly if we consider only the last 12 months before the date considered, given that the data presented above are significantly influenced by the regulation, which admitted some types of issuers later than others. Although the percentage is lower, innovative start-ups continue to dominate (58% of issuers), but with a smaller gap towards SMEs (22%), innovative SMEs (13%) and investment vehicles (7%). Analysing the geographical distribution of the issuers, the role of Lombardy is of absolute centrality (215 out of 547), followed by Lazio (59) and Emilia Romagna and Piedmont (42 each) which complete the podium, but with a large gap from the top step. Another useful information that we can find in the report is the different distribution regarding the sectors to which the companies that participated in a crowdfunding campaign belong. These data were collected thanks to the codes with which the companies are registered with the Revenue Agency.

Firms operating in the information and communication sector largely dominate this statistic (238 out of 547 broadcasters). Completing the podium, but quite in the background, were the companies operating in the field of professional and scientific research (86 broadcasters) and manufacturing companies (78 broadcasters).

	Mean	Median	Min	Max
Capital before (€)	165,091	47,038	-1,153,607	6,421,295
Years from funding	2.8	2.0	0	46.0
Revenues (€)	355,006	3,008	0	50,214,561
Profit (€)	-55,226	-8,279	-3,115,804	512,672
Number of shareholders	6.4	4.0	1.0	79.0
Pre-money Valuation (€)	2,714,834	1,647,348	10,000	43,478,261

Table 4: Statistics of Italian Companies that underwent Equity Crowdfunding (Politecnico di Milano, 2020)

Table 4 is useful if we want to shift our focus to financial metrics. In this sense, much of the information that the companies provide is negligible: given the young age that normally characterizes the issuing companies (start-ups with a median of 2 years and a mean of 2.8 years), information on revenues, earnings and other financial metrics they are not indicative of the potential of the future company.

On the contrary, the implicit pre-money valuation represents an interesting and intuitive parameter. Its result is obtained by comparing the number of pre-campaign shares the company's offer share and the share price. The mean value of the pre-money valuations is 2.7 million euros, with a median of 1.6 million euros; for the calculation of these values, real estate campaigns and investment vehicles were not considered. The final result of these evaluations shows the following distribution: 296 campaigns (60% of the total) are issued by companies with pre-money valuations between € 1 million and € 5 million, 147 campaigns (30%) by companies with valuations pre-coins below 1 million and only 51 campaigns (10%) above € 5 million.

Other items are analysed within the report, among these we find in particular the different purpose for which a campaign was issued. The development of marketing and brand awareness operations (49% of cases) is the most frequent case, in second place we find the development of software platforms or mobile applications (30%) and the research and development or development activities of product beta (27%). This data intrinsically provides interesting information, in fact if we analyse this situation we note that the main purposes are distinctive of companies at the beginning of their life cycle or in any case in the early stages.

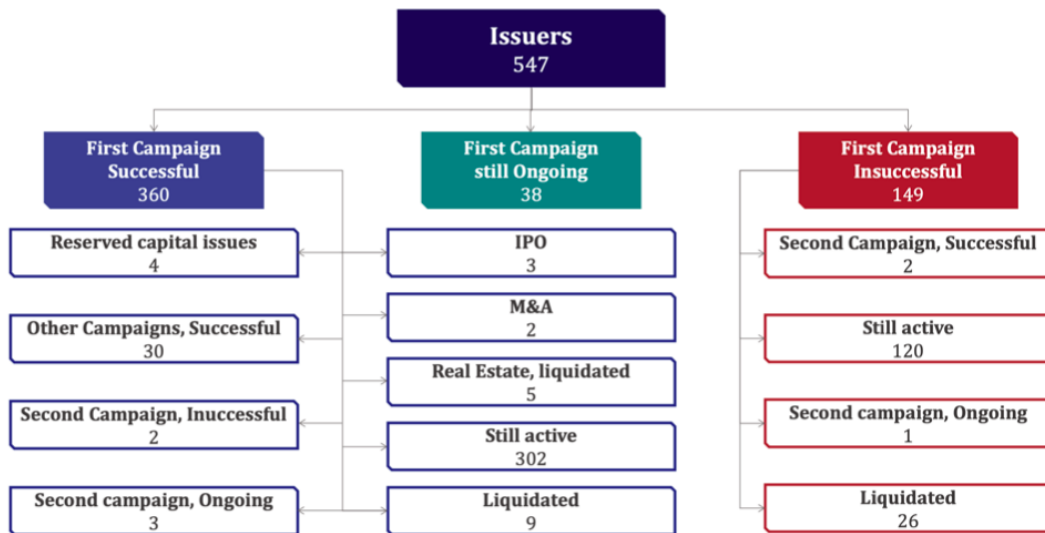


Figure 5: Issuers Situation after Equity Crowdfunding (Politecnico di Milano, 2020)

In the conclusion of this chapter, we provide an overview, through the graphical representation in Figure 5, of the results from the 547 companies that participated in an Equity Crowdfunding campaign in Italy up to 30 June 2020. In particular, three categories are considered: companies that have been successful in their first Equity Crowdfunding campaign, companies that have not been successful and finally companies that have carried out campaigns of which it is not yet possible to identify the result.

An interesting analysis that this subdivision allows us to operate is the identification of the incidence of liquidated companies within the first two categories. As you can see, there appears to be a correlation between a campaign failing and being liquidated, so it appears that bad companies are less likely to receive funds during Equity Crowdfunding

campaigns. In reality there is no evidence to prove this phenomenon, but on the contrary this hypothesis could be easily attacked by saying that bad companies could also be present within successful campaigns, exploiting the funds raised to avoid liquidation.

2.3 Post Financing Performances and Human Capital Relationship

This chapter of the literature review is fundamental to develop the analyses relating to the main theme of this paper, that is based on the post-campaign performances (which can be a good proxy for company growth) and on the relationship with human capital and investors. In this section the following performances will be presented to an equity funding, of seed/early stage initiatives. The main objective is to analyse different sources of financing (e.g., VC and business angel), to understand if these are a cause of possible tangible and different effects on young companies. Does equity funding represent a boost for the growth and development of a company? If so, are there forms of financing that in practice accentuate these positive effects? Below we present the literature relating to the performance of innovative SMEs or start-ups after the use of the traditional sources of equity financing: business angels and venture capitalists. First, these actors will be described to underline the different characteristics that define them and to specify different categories. Subsequently, the analysis will proceed by developing the discourse in two separate sub-chapters, analysing the post-financing performance in both cases. Given the presence of these figures also within the Equity Crowdfunding ecosystem, we will introduce the role of so-called serial investors (a category that includes among other BAs and VCs), to study their role and their financing decisions, preparing so are the subsequent analyses regarding their influence on post-campaign growth. To conclude, the review of the literature will move to the main topic of our analyses, taking up the existing contributions based on human capital, first in relation to the generic growth of a company (here some studies made also on VC will be resumed), then in relationship to success in Equity Crowdfunding campaigns. Once the collection of studies on human capital has been completed, we will proceed with the conclusion, presenting the gap in the literature that we want to fill, or the issues that have not yet adequately addressed and that we want to deepen with this paper.

Business angels (BAs) are individuals with a very high net worth and a keen interest in innovative projects who invest a portion of their wealth in high-risk, high-return business ventures (Freear, Sohl & Wetzel, 1994). In addition to investing money, business angels contribute their business skills, know-how and business contacts, playing a practical role

in the company they invest in (Mason and Harrison, 1995). BAs play a pivotal role in the economic landscape and, in many countries, constitute the largest source of external funding, after family and friends, in newly established initiatives. Depending on the situation, a business angel can invest alone or through a group of partners. In fact, through group investments, the BAs reduce the level of risk (since the capital to be invested is not borne by the individual but is divided among the members) and at the same time strengthen the skills and knowledge useful for the continuation of the project.

Venture capitalists (VCs), on the other hand, are companies of professional investors who make medium to long-term investments (typically 5 to 10 years) in the capital of young unlisted companies, with the primary motivation of obtaining an exponential economic return compared to the amount invested, in the event that the financed company is successful (Wright and Robbie, 1998). However, it must be said that the reasons strongly depend on the organizational structure of the VC. Usually, the organization of a VC is divided into two distinct units: a VC company, which is managed by the so-called "general partners", and a VC fund is added to the company. The task of the general partners is to create the fund in order to raise the money from the various investors. These investors, who provide the capital of the fund, depend on the type of VC considered. In fact, there are different types:

- Independent VCs, which raise funds on the market, from pension funds, corporations, sovereign wealth funds, funds of funds, wealthy individuals and so on. Investors are called "limited partners".
- Corporate VCs, which are affiliated with non-financial companies that provide the financing (they may have different levels of autonomy from the parent company).
- VCs controlled by banks, which are affiliated with banks.
- Government VCs, which are owned by the government (in such cases is not often syndication with external investors and / or VCs).

The distinctive feature that unites the companies in which VCs decide to invest is the very high growth potential. Some of the most successful companies of recent years (the e-commerce Zalando or the site Trivago for example) have been financed by VC. General partners often play an important role on the board of directors of the companies they

invest in, especially in terms of strategy definition and hiring choices for key employees (Sahlman, 1990).

Consequently, both VCs and angel investors are typically among the most important shareholders of entrepreneurial firms, second behind the entrepreneurs themselves (George, 2005). They are investors or contributors of "smart money" who add value (Bruton et al., 2010; Mason and Harrison, 1996; Sapienza et al., 1996). This means that these investors are not only important for the loans they provide, but also for the subsequent consequences that this interaction triggers, coming to continuously and personally monitor the progress of their companies in their portfolio and providing value-added services. In figure 6 we report some examples of famous investments by VCs in recent years, to underline the type of returns that are sought by these players.







EXIT EXAMPLES		
Company	Investment	Exit
	24M INVESTMENT	7.7B EXIT
	411M INVESTMENT	6.7B EXIT (IPO)
	39M INVESTMENT	5.4B EXIT
	181M INVESTMENT	5.3B EXIT (IPO)
	157M INVESTMENT	1.7B EXIT
	141M INVESTMENT	692M EXIT

Figure 6: Examples of some exits performed by famous companies

2.3.1 Performances of BAs-Backed Firms

In this regard, it is useful to mention a study carried out by Bonini, Capizzi and Zocchi (2019). Using a database containing qualitative and quantitative data on 690 transactions carried out by 380 business angels in the period 2008-2012, they analysed the performance of the companies after the intervention of the BAs. These data were obtained from sequential surveys administered by the Italian Business Angels Network (IBAN) to its associates and other non-affiliated BAs starting in 2007. IBAN is the national trade association of business angels and groups / networks of angels. The sample on which the series of analyses was based was created taking into account both survival information and information on the financial performance of companies supported by business angels, up to 3 years after the investment. The total number of companies that make up this sample is 111, taking into consideration the time interval between 2008 and 2012. The post-investment analyses that have been carried out introduce a particular measurement procedure, to avoid neglecting the fact that the small businesses that receive a capital injection need time to make operational investments, adjust the business model and finally, if possible, make positive profits. In this sense, a "Performance Index" was constructed, used as a proxy for the performance and the probability of survival of the companies analysed, based on different combinations of revenues, asset value and income.

The results obtained through this research demonstrate the positive influence created after investments by BAs, in fact the post-investment performance and the probability of survival increase with the presence of angel investors, in particular in the case of syndicated agreements and in cases of direct involvement of investors.

This data is in line with the above theory and underlines the ability of angel investors to increase the quality of the flow of operations and selection processes. This is then reinforced by the non-monetary contributions that BAs offer to businesses, which are crucial for survival and future growth. The active involvement of these investors creates a greater synergy than simple monitoring, solidifying all the most delicate aspects within the company, thus increasing the profitability of the business and its probability of survival. This is especially true for those companies that at the time of the loan received do not yet have a particularly high profitability. On the other hand, in the case of truly promising companies, which regardless of the type of financing received are already active on the reference market, this mechanism has less impact.

2.3.2 Performances of VCs-Backed Firms

One of the key factors on which the success of a business venture most depends is risk capital. Both academics and professionals in the sectors concerned agree on this statement, in particular, there are several studies at the firm level that have analysed the relationship between venture capital financing and firm performance. The results of these studies obviously take VCs into account and show that VC-backed companies usually grow faster, file more patents, have higher productivity, and are more likely to go public than non-VC-backed ones (Wright and Robbie, 1998). Croce, Martí and Murtinu (2013) have written a really interesting article that deals with this very topic. The main topic of their paper is the search for a particular factor to be identified as the trigger for the improvement of the performance of European companies supported by VC in the high-tech sectors. The two main factors taken into consideration are "screening" and the "added value" provided by VC investors to the company in which they invest. One of the purposes of their paper is to answer the question: "Is the superior performance of the companies supported by VC correlated with the loans received or the value-added activities carried out by the VC investors?".

In this sense, the analysis is based on various productivity growth measures, which are used as capable of isolating the "financial effect" from the "added value effect". TFP growth (total factor productivity) is analysed as well as different partial productivity (such as that of labour and capital) in order to have a greater capacity to contextualise the results.

The sample underlying the analyses included 696 companies, 267 of which were venture capital-backed, located in six European countries: Belgium, Italy, Finland, France, Spain and the United Kingdom. The data took into consideration a period ranging from 1994 to 2010, therefore over fifteen years.

The results obtained showed that firms supported by venture capital do not show a productivity growth significantly different from firms supported by other types of capital, especially as regards the first round of capital raising, thus excluding a screening effect. On the other hand, the figure is diametrically opposite if we consider the companies after the first round of financing: in this case the growth of companies supported by risk capital provided by VCs is much higher than the others, so the positive effect that it was expected. Furthermore, there is an interesting imprinting effect, in fact the companies supported by VC, even after these investors leave the scene, do not show a significant decrease in

growth rates. In fact, they are able to maintain the highest level of productivity achieved during the detention period. This analysis shows how the positive effects of the support provided by VCS not only exist, but are also lasting over time, guaranteeing a solid growth of the capital productivity of the companies in question that does not fade over time and is higher than that of companies that they are financed through other instruments.

2.3.3 Serial Investors in Equity Crowdfunding

The term “investors” is very generic when you think about how they can differ from each other. The principle of equality is a fundamental pillar when it comes to investors, but in this case it cannot be applied. Within Equity Crowdfunding, a first distinction to be made is that between retail investors and professional investors. Retail investors are on average less experienced and will therefore require a higher level of protection, while professional investors do not have the same need for less protection. As the word itself says, professionals should in fact be able to protect their interests and those of their clients. This mechanism is not only a matter of course, but is regulated by a series of rules that must be respected (The Committee of European Securities Regulators, 2002). Professional investors are specialized financial institutions that invest on behalf of the members of the organization. In particular, they manage capital that derives from the collective savings of small investors towards a specific objective in terms of risk profile, yield maximization and credit maturity (Davis and Steil, 2018). Within the academic research there are several examples that show how professional investors have supported Equity Crowdfunding projects with the aim of receiving a monetary return - while other types of crowdfunding, which are created to respond to non-financial needs or to obtain physical rewards and experiential play no significant role for these actors. For example, Zhang et al. (2016) showed that a large proportion of ECF investors are corporations, institutional investors such as venture capital firms, angels and funds. Subsequently, Kummervold et al. (2019) introduced a definition of Crowdfunding that also includes these figures: “ECF refers to the collective efforts of non-professional and professional actors to finance projects initiated by other actors who use the Internet in exchange for financial rewards”.

These investors create mechanisms with other players in the ecosystem, especially with the crowd and with ventures. Small investors, the "crowd", rely on serial investors to

carry out due diligence, both because of the high costs and the lack of skills and experience (Ahlers et al., 2015). Thanks to the presence of professional investors who have an information advantage, they can therefore decrease the risk associated with investments (Signori and Vismara, 2018).

In this sense, there are different situations of collaboration between the different types of investors (detailed in section 3.3 of the hypothesis development).

In parallel, professional investors relate to ventures. Within the literature on financial intermediation there are studies on the information roles of professional investors, dealing with the alleviation of problems of moral hazard or adverse selection (Diamond, 1984; Fama, 1985; Stiglitz, 1985). Venture capitalists, Business Angels and Incubators are types of financial intermediaries that are primarily concerned with financing entrepreneurial companies and recent studies suggest that their role extends beyond that of traditional financial intermediaries. In fact, the presence of one or more institutional investors influences managerial decisions but not only (Erenburg et al., 2016; Aghion et al., 2013; Brav et al., 2008). The governance and performance of the target company may also be of interest to these figures.

The portfolio of companies is enriched by packages of value-added activities (Gompers and Lerner, 2001) and thanks to their professionalism, professional investors thus play a crucial role (Bygrave and Timmons, 1992; Gorman and Sahlman, 1989). The resulting benefits are both direct and indirect, such as coaching or network access and certification effect to third parties.

Although professional investors often play the role of incubators, it should be emphasized that each of them intervenes with different purposes and at different moments in the development of a company (hence the two previous sections BAs / VCs).

A definition of an incubator can be “a supportive environment for start-ups and new businesses” (Peters et al., 2004). There are many and similar definitions available (Hackett and Dilts, 2004). The components studied most by the researches already carried out are four (Aernoudt, 2004; Bøllingtoft and Ulhøi, 2005; Chan and Lau, 2005; Clarysse et al., 2005; Collinson and Gregson, 2003; Colombo and Delmastro, 2002):

- shared office space, which is rented on conditions more or less favourable to the incubates,
- a pool of shared support services to reduce overheads,
- professional business support or advice ("coaching") and
- network supply, internal and / or external.

The different components have been studied with more or less emphasis according to the periods (Peters et al., 2004).

The most recent research identifies the use of shared localities as a significant advantage, not for a cost motivation but for the importance of the transfer of knowledge and sharing of experiences, which operating in the same environment allows (Bergek and Norrman, 2008). Finally, the support services offered often find entrepreneurial training and consultancy, as well as commercial or accounting-related services, move on to legal matters, advertising and financial assistance (Bøllingtoft and Ulhøi, 2005; Chan and Lau, 2005; Lyons et al., 2003; Mian, 1996).

2.3.4 Human Capital Role in Firm's Growth

In the literature there are many empirical studies that have analysed the relationship between the human capital present inside a company and its growth potential, however among these, only a modest part focuses on innovative start-ups. The basic idea, which often unites these studies, argues that a good level of specific work experience in the sector in which one operates is a crucial factor for growth (Cooper and Bruno, 1977; Feeser and Willard, 1990; Colombo and Grilli, 2005a). More controversial, on the other hand, are the opinions regarding the role of managerial experience and the training of founders (see Stuart and Abetti, 1990; Westhead and Cowling, 1995; Almus and Nerlinger, 1999; Colombo and Grilli, 2005a).

These results are generally interpreted as confirmation of the skills-based vision according to which companies characterized by quality human capital, especially if with previous experience in the reference sectors, have distinctive skills that other companies do not possess and that stimulate growth (direct effect of human capital on firm's growth). This positive association, however, cannot be used as a test to confirm the correlation between these two variables, unless other possible influencing factors are considered. For example, this association may stem from the greater ability of higher human capital entrepreneurial teams to attract VCs or BAs, whose investments have a strong impact on the growth of a company (indirect effect of human capital).

This interpretation has been researched several times over the years, with the first studies relying on surveys or interviews with VC investors. The results show that the general

management skills and sector-specific experience of the founders of the firms are important selection criteria for these investors (Tyebjee and Bruno, 1984; MacMillan et al., 1985, 1987; Muzyka et al., 1996; Sheperd et al., 2000. For a divergent view, Zacharakis and Meyer, 1998). Recent studies include Kaplan and Strömberg who in 2001 analysed the investment memoranda of 11 VC partnerships for investments in 67 companies. In this case, within the investment motivations, the quality of the management team is important, while the specific experience of the founders in the sector in which they operate has a decidedly lower specific weight.

However, econometric studies that can explain the relationship between the human capital of business founders and the likelihood of receiving VCs are rather limited and often conflicting. Audretsch and Lehmann (2004) focused on the topic of education, highlighting that, analysing a sample of 341 German start-ups listed in the Neuer Markt, the number of members of top management with a PhD is not correlated to the obtaining a loan from VC. Conversely, Engel and Keilbach (2007), analysing a sample size higher than young German companies, they found a strong correlation between the education of the founders and the likelihood of receiving VC. Another example is the studies by Baum and Silverman (2004) which showed that the annual pre-IPO amount of VC funding obtained by Canadian biotech start-ups increases as the managerial skills of the company's president increase, while it is correlated. negatively on his entrepreneurial experience. Beckman et al. (2007) carried out an analysis that considered both the founding team of a start-up and its top management at the time of the analysis, focusing on the Silicon Valley area. The results showed that the probability of receiving VC increases if there is previous managerial experience of both founders and current top managers, while it decreases in the case of previous experience in start-ups. Finally, Eckhardt et al. (2006) modelled the reception of external capital (including VC) as a double selection process, then analysing the relationship with human capital. The first selection is of the founders of the companies, who decide whether to seek funding or not. The second is for the investors, who select among the companies looking for a loan the ones they consider most interesting, based on the project and investment criteria. The analysis was carried out taking into consideration the long-term data of a representative sample of 221 Swedish start-ups. Of this less than 10% raised funds from VCs. The number of years of industry-specific experience of the founders, and the total number of

previous start-ups of the founders, have an influence on investors and the likelihood of obtaining funding.

2.3.5 Human Capital and Equity Crowdfunding Success

The most recent studies have begun to take into consideration the relationship between human capital and success within financing instruments also other than VCs. In particular, in recent years, thanks to its rapid spread, crowdfunding has attracted the attention of several authors, who have studied the relationship between the human capital of the founding team of the issuing company and the probability of success of the campaign itself. Although the studies carried out are not yet very extensive, it is worth mentioning the most interesting ones carried out so far.

The first distinction that must be made when it comes to human capital is the size of the entrepreneurial team that promotes a campaign. "Solo founders have a lower probability of conducting successful initial ECF offerings than founder teams and are also more likely to fail thereafter. The implication that founder teams enjoy more success is due to the fact that the quality of their human capital may likely attract professional investors who can act as a certification effect. Likewise, the monitoring role of professional investors helps to minimize moral hazard concerns and thus lowers the likelihood of failure for ECF founder teams. The results also establish that founder team human capital characteristics are significant determinants of initial ECF campaign outcomes and venture failure" (J. Coakley, A. Lazos and JM Liñares-Zegarra).

JoAnne Yong-Kwan Lim and Lowell W. Busenitz, in their paper entitled "Evolving human capital of entrepreneurs in an Equity Crowdfunding era", showed how the human capital of a company is essential to obtain financing from an Equity Crowdfunding campaign, then focusing on the three characteristics of human capital that most have a positive correlation with the probability of success of the campaign: start-up experience for previous ventures, management experience with small organizations and start-up experience with ongoing ventures. Subsequently they also took into consideration the size of the founding team, differentiating the individual entrepreneurs from the related groups of more people, showing how the more the number of the group grows, the less the managerial experience of human capital impacts on the success of the campaign (for example, in the case of large companies, it has practically no impact). This positive

relationship was then supported by other similar studies, which stated: "Using a dataset of 1,111 start-ups with investment funding totalling over \$ 4.67 billion, we analysed the association between the underlying characteristics of a start-up and its financing outcome. We have found that the financing outcome of a start-up is positively associated with its human capital "(An J. and Kim H.-W., 2019).

As for the contributions on this issue that took into consideration the start-ups and Equity Crowdfunding campaigns present in the Italian territory, it is impossible not to mention the studies by Evila Piva and Cristina Rossi-Lamastra that on November 20, 2017 published "Human capital signals and entrepreneurs' success in Equity Crowdfunding". Within their paper, the authors analysed some distinctive characteristics of entrepreneurs, studying the correlation of these with the probability of success of their Equity Crowdfunding campaigns. The starting sample included 460 different entrepreneurs, who within the SiamoSoci platform, between mid-2012 (when the first crowdfunding campaign was launched on the site) and 1 February 2014, carried out a total of 160 campaigns. Subsequently, for each entrepreneur, all the information necessary for carrying out the analyses, where present, was collected. The definitive sample on which the study was carried out was made up of 284 entrepreneurs, 57% of the starting figure, the total number of Equity Crowdfunding campaigns was 129 (80%). Within the selected sample, only 37 entrepreneurs (13%) managed to raise their own capital for their start-ups through SiamoSoci, thanks to 12 campaigns that reached the target capital. Through econometric analyses, the study showed that there are indeed signs of human capital capable of reducing the information asymmetries faced by crowdfunding investors, thus guiding entrepreneurs to the success of crowdfunding. However, the correlation of these human capital characteristics with the success of the campaign depends both on the adaptation of the characteristic in question to the quality of the start-up and on the ambiguity of the characteristic. For example, some human capital traits that are well suited to both start-up quality and low ambiguity, namely business training and entrepreneurial experience, are important for entrepreneurs' success. Conversely, those that fit worse (i.e., other education and other work experience) or those that fit well, but with high ambiguity (i.e., industry-related education and industry-specific work experience) do not contribute to the success of the campaigns.

Finally, Barbi and Mattioli (2019) using a sample of 521 companies funded between 2011 and September 2017 on the Crowdcube platform, showed that education, professional

experience and, more slightly, the gender of team members affect both total capital raised, but also on the number of investors who support the initiative (which obviously represents an important parameter to consider for the eventual success of a campaign). On the contrary, other interesting attributes of human capital (such as the volunteering experience) are instead ineffective, probably given the lack of affinity with the business world.

2.3.6 The Gap and Conclusions

The purpose of the literature review is to focus on existing studies to summarize the essential concepts a reader should know before approaching our analyses. In our case it is essential to present an overview of the crowdfunding world, then focusing on the one based on equity, the main topic of the paper. The main purpose of our analyses is to identify the consequences of this tool on the performance and growth of companies after capital financing, which is why it was essential to also investigate the issue of post-financing performance in the case of other types of investors. as BAs and venture capitalists, to capture the main differences.

The second objective of the literature review is to identify the less detailed topics by the authors, in order to create a unique research, which is not limited to a synthesis of what has already been written, but sets itself the ambitious goal of enriching the literary landscape today. In this regard, a topic that can be enriched with new ideas is the relationship between the characteristics of human capital on the performance and growth of a company after success in an Equity Crowdfunding campaign. We believe that this topic may be interesting, as it is treated by various authors but only in relation to the success of the campaigns and not to subsequent developments.

Can the characteristics of human capital that influence the success of ECF campaigns also influence post-harvest financial performance?

We have also seen in the literature how BAs and VCs backed companies have a strong drive to grow. Within the Equity Crowdfunding ecosystem, there are many professional investors, but even in this case, studies have been carried out focusing on their role in the success of campaigns. Will they also be able in this ecosystem, where professional investors coexist and collaborate with the crowd, to influence the growth of the companies

in which they invest? The goal of our analysis is to try to answer these questions too, which represent the gap we want to fill.

3 Hypotheses Development

Our paper has, so far, been limited to a review of the key concepts in order to create a clear overview of the reference ecosystem on which our analysis will be based.

In this sense, the developments and origins of Crowdfunding, Equity Crowdfunding, company growth after equity funding and the role of human capital were discussed, as well as a precise overview of the international legislation currently in force in some countries.

This chapter will take up the concepts introduced and discussed in the literature review and will explore some concepts that deserve to be explored, in particular the relationship between human capital and business growth after a successful Equity Crowdfunding campaign, but also the role of the investors after the campaign.

The study will be based on the creation of robust hypotheses that will be validated with empirical analyses. The development of the hypotheses derives from the identification of gaps within reviewing the literature and defining the best approach to address these questions and validate the results. The questions formulated will be used to grasp all the details within the sample of data available to us.

3.1 The Importance of Human Capital in Equity Crowdfunding' Success

The first hypothesis we want to validate is the existence of a positive correlation between the human capital present in the company and the probability of success in an Equity Crowdfunding campaign. Although this topic has already been addressed by several authors, as reported in section 2.3.5 of the literature review, we believe it is right to propose it again, both because it will serve as a basis for subsequent hypotheses, and because within the data available to us are present some characteristics of human capital different from those already used by previous authors.

An entrepreneur at the head of a start-up is certainly the individual in possession of most of the information on the quality of his business. Any external resource provider will have less data available and therefore will often find it difficult to assess the quality of the start-up (Shane and Stuart 2002). Due to this phenomenon, information asymmetries represent one of the biggest challenges for entrepreneurs and start-ups seeking equity financing (Hoenig and Henkel 2015). The entrepreneur is therefore incentivized to reduce these asymmetries through actions designed to show the key attributes (his or his start-up) that function as quality signals for external investors. These signals make the difference for a lender, who uses them to identify the right investment (if interested in the speech in the case of IPO, Park and Patel 2015). Given the seriousness of the information asymmetries present in crowdfunding, it is reasonable to think that these signals are further important in this context. Taking up a sentence from the study by E. Piva and C. Rossi-Lamastra "Equity Crowdfunding campaigns have a limited duration (Skirnevskiy et al. 2017) and the interactions between entrepreneurs who launch the campaigns and (potential) investors take place mainly online (Baucus and Mitteness 2016). Therefore, crowdfunding investors, who are mostly non-professionals with limited past investment experience (Agrawal et al. 2014), cannot conduct thorough face-to-face due diligence and / or commit in wide-ranging start-up surveys for which entrepreneurs seek funding. Consequently, when making their investment decisions, these investors must look for start-up quality signals among the information that entrepreneurs have made available on the crowdfunding platform and / or easily accessible on the Internet". This sentence perfectly explains the mechanisms underlying the choice of a lender, based on the limited

information available to him, for this reason, also based on the entrepreneurial finance literature, we can say that certainly human capital is part of the quality signals.

However, signals are expensive to send and the advantage of sending them is greater for high quality agents (Spence 1973). Thus, signals inherently distinguish agents by their quality. Spence further argues that education is a human capital signal that distinguishes workers on the basis of their skill level and by which those with more skills earn higher wages. However, education is expensive to acquire, both for the time that must be devoted to it and for the taxes to be paid. This cost is not fixed, in fact it decreases for high-capacity workers, who on average are faster in completing their studies. For these reasons, high-skilled workers invest in education as the related costs will be offset by the following results. Within the literature, several authors have taken inspiration from this approach to document how the training of entrepreneurs favours the attraction of equity capital as a sign of quality of start-ups (for example Franke et al. 2008; Hsu 2007). The common idea of these analyses is the fact that an educated entrepreneur is intelligent (Certo 2003), therefore able to apply what they have learned in their studies and exploit their skills to increase the quality level of their start-up. Among the various interesting arguments is the one made by Ahlers et al. (2015) which studies the presence of an MBA degree within an entrepreneurial team as an effective signal of human capital in Equity Crowdfunding. In fact, obtaining this title confers better managerial and decision-making skills to the individual as well as training him strategically, making him able to seize the opportunities that present themselves (e.g., Lewis et al. 2014). MBA titles, if shown in the documents attached to the offer, reduce information asymmetries for investors, thus increasing their probability of success of the campaign.

However, it is not possible to summarize the quality of human capital in a single datum, especially when it comes to education. E. Piva and C. Rossi-Lamastra analysed the correlation between the success of campaigns and education, dividing the latter into three different types: managerial training, training related to the sector of reference of the start-up and finally training of other types. The results showed how managerial training have a higher correlation than other training courses and training relating to the sector to which the business belongs, probably because these last two indicate to interested investors a lower quality of human capital in terms of start-up management skills.

Based on these arguments we want to enrich this discourse as we believe that there are useful trainings in addition to those of a managerial type or related to the business sector.

In fact, within Equity Crowdfunding, where investors choose their investments mainly based on the information associated with the campaign and available on the platforms, we believe that communication plays a fundamental role. This hypothesis is supported by the literature in which we find several examples relating to the study of the importance of the so-called communication skills. The different authors agree that these skills represent a significant factor of organizational success (Du-Babcock, 2006; Roebuck, 2001; Dilenschneider, 1992; Rushkoff, 1999). For this reason, it is reasonable to assume that investors are further incentivized to invest in companies that possess these skills, both for a direct mechanism (as they are a characteristic symptom of successful companies), and for an indirect mechanism (more communication skills imply better communication plans on Equity Crowdfunding platforms, attracting more investors). For this reason, we also intend to include formation courses in communication and marketing within those considered useful.

Based on these arguments, we created the first hypothesis of this paper, namely that within an entrepreneurial team, the number of "useful" degrees (in managerial field, in the sector of their start up, in communication) influences positively the probability of success of an Equity Crowdfunding campaign.

Hypothesis 1a: *Entrepreneurial teams with a higher percentage of members with useful degrees are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with fewer useful degrees.*

In the same way, always based on the studies of E. Piva and C. Rossi-Lamastra, we take into consideration the work experience of the entrepreneurs who promote a campaign. The authors have also divided the work experience in three separate categories, taking up the same categories addressed for the discourse relating to education. The results found underline how the first category (managerial experience) is related in a different way to the quality of the start (i.e., they differ as regards the adaptation of the signal). There are studies based on venture capitalists and business angels, which show how these investors place a high value on the entrepreneurial experience of the teams they invest in (Carpentier and Suret 2015; Gimmon and Levie 2010). Surely these characteristics are also fundamental for the success of the business of a start-up. In fact, experienced entrepreneurs probably have innate abilities superior to others in finding and exploiting

opportunities in their favour. An advantage of the previous experience of an entrepreneur is certainly represented by the social relationships already established, in particular with customers and suppliers, which in today's world have become a crucial resource for new start-ups. Social relations also develop in the event of failed projects. In particular, failures are learning opportunities through which entrepreneurs can review expectations and approaches to entrepreneurship (Sitkin 1992; McGrath 1999). For this reason, there are studies that confirm that investors give importance to various previous experiences, often considering even unsuccessful ones to be positive (Hsu 2007).

The specific experience of the sector is a signal that certainly interests investors. In fact, through these signals, crowdfunding lenders can easily deduce some characteristics of the entrepreneur.

Normally it is assumed that those who have already worked in a sector are familiar with the environment in question and therefore will have less difficulty in managing many aspects regarding the continuation of the start-up business (for a similar topic, see Cohen and Dean 2005). The in-depth knowledge of technologies, production processes and sector-specific competitive dynamics are important success characteristics (e.g., Burton et al. 2002; Behrens et al. 2012; Gimeno et al. 1997); in addition to the superior ability to seize opportunities in the sector (Feeser and Willard 1990). Furthermore, the discussion already addressed above on relationships established thanks to previous experiences, is also valid in this case and assumes greater importance as almost all existing relationships can be exploited again. On the contrary, the skills developed by an entrepreneur through other work experiences, which have no points in common with the sector of his start-up, are less easy to exploit and consequently a lower signal of quality. Although the work experience in the reference sector of the start-up certainly represents a signal of quality for investors, the results of the studies by E. Piva and C. Rossi-Lamastra did not show a significant correlation between the two variables.

Similarly to hypothesis 1a, we intend to re-propose these studies. We believe that among the possible work experiences of an entrepreneur, the entrepreneurial one plays a fundamental role within Equity Crowdfunding. While the experience related to the sector to which the company belongs can help in the development of products, in the analysis of possible competitors or in understanding the market, the entrepreneurial experience contains within it a series of skills that for start-ups (which represent a good part of the companies that decide to use the ECF) are vital. Investors themselves (especially the

crowd, which cannot enrich the company with its wealth of skills, information and resources) will be concerned primarily with investing in a company capable of surviving difficulties, rather than in a company with a human capital who knows their sector perfectly but does not have the skills to manage the business. For this reason, we have decided to consider only the entrepreneurial experience as a characteristic of human capital related to the working environment. Thus, hypothesis 1b is created.

Hypothesis 1b: Entrepreneurial teams with more members with entrepreneurial experience are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with less members with entrepreneurial experience.

3.1.1 The Moderation Effect of the Company Age

Once we have considered the human capital factors that can positively influence the outcome of an Equity Crowdfunding campaign, it is important to look for the factors that could influence these relationships. In fact, in some situations, the relationship between two variables is not constant but is dependent on a third variable. This third variable is the moderating variable, which affects the strength of relationship between the two variables. The general results obtained through the study of the first two hypotheses formulated could in this sense overlook some interesting phenomena, for this reason it is important to understand how the differentiation factors of the companies considered influence our results.

One of the factors that differentiates the companies participating in Equity Crowdfunding is certainly the age of the company, in fact there are companies that use this tool as soon as they are founded, while others follow other paths and only after several years decide to dedicate themselves to Equity Crowdfunding.

In the literature there are several studies that take into consideration the moderating effect of company age with respect to various variables. In 2020 Mabenge, Ngorora-Madzimure and Makanyeza examined the age-moderating effect of company age on the relationship between innovation and small and medium-sized enterprise (SME) performance in Harare, Zimbabwe. The sample used included 330 SMEs and the hypothesis was tested using structural equation models and moderate regression analysis. The results obtained by the authors show that the effect of marketing innovation on the financial performance of the firm is stronger in younger firms than in older ones. Another interesting study is the one carried out in 2019 by Ngatno and Dewi R.S., which takes into account the moderating effect of company age on the relationship between managerial adaptive capacity and company performance. The empirical study tested the conceptual model using sample of Indonesian SMEs. The results found a positive correlation between the adaptability of managers in a company and company performance, but also highlighted a decrease in this correlation as the company age increases. The article "Influence of Founder — CEOs' Personal Values on Firm Performance: Moderating Effects of Firm Age and Size" (Ling Y., Zhao H. and Baron RA, 2007) investigates the effects of two values held by the founders-CEOs (collectivism and news) on the post-start-up performance of companies. By integrating congruence and organizational life cycle

literature, the authors then study the moderating effects from corporate age on both relationships. The results derived from an analysis of a sample of 92 SMEs are very interesting, in fact collectivism exerts stronger beneficial effects in older companies, while novelty exerts stronger beneficial effects in younger companies. This example is perfect as it demonstrates how two factors that positively influence company performance in a similar way actually have completely different effects when related to company age. These studies provide a solid basis regarding the moderating effect of company age on the correlation of variables that well represent some characteristics of companies and the consequent performance. However, there are still no similar studies that focus their attention on the world of Equity Crowdfunding. For this reason, we have decided to enrich the existing literature with our contribution, adding a third part to our first hypothesis, taking into account this mediating effect of the company age with respect to the relationships between human capital and success in the ECF described in Hypotheses 1a and 1b.

As regards the first part (Hypothesis 1a), the human capital variables analysed were the percentage of team members with managerial degrees, from the sector to which the start-up belongs and in communication. The first two are important as they reassure investors that the company team has the skills necessary for business development. For this reason, it is logical to think that in a very young company they have a greater weight for investors who want to participate in the campaign; in fact, without the right skills, it would be impossible to understand the market in question, manage the managerial aspects and overcome the obstacles that an innovative start-up often has to face. On the contrary, an "older" company has already completed several exercises, which would be very complicated without the skills mentioned above, so investors will tend to give more importance to the company's results rather than human capital data, assuming that a company that has been operating successfully for some time certainly has the necessary skills to do so.

The speech changes slightly for the degree in communication, in fact it is not comparable to the others in terms of attractiveness for investors, who certainly give greater importance to managerial and specific skills. However, for young start-ups who decide to use the ECF as a funding tool, one of the biggest challenges is to attract the investors themselves. The balance sheet data are often nil or scarce and given the scarcity of economic

resources, the budget for marketing and communication is never high. For this reason, having to hit investors by communicating their idea through, for example, a business plan, we believe it is logical to assume that greater communication skills can help create more captivating and effective business plans and marketing plans, attracting more investors. For this reason, we expect a greater correlation between the percentage of communication degrees in the team and the success of campaigns in companies with a lower age than others.

The last human capital variable considered is the entrepreneurial experience of the team (in terms of number of years and number of previously founded start-ups). This case can easily be traced back to the previous ones, in fact we can consider the entrepreneurial experience as a further way to acquire managerial and entrepreneurial skills, so the discourse made for managerial and specific degrees applies well to this case too.

In conclusion, taking up what has been said, we can expect a moderating effect of company age on the relationships between human capital variables and the success of ECF campaigns, thus formulating the last part of our first hypothesis:

Hypothesis 1c: *Company age has a moderating effect on the correlation between human capital variables and the success of an Equity Crowdfunding campaign.*

3.2 The Role of the Human Capital after the Equity Crowdfunding Campaign

The different financing instruments that a company can use to obtain capital have very different characteristics and are selected based on the objectives that a company wants to achieve. If we consider the main needs of innovative SMEs, we understand how the need for capital derives mainly from the ambition of entrepreneurs who want a large and rapid growth of their business. In fact, growth is a common goal for all companies, from the most modest to those already established, but it is difficult to achieve without the right means, especially economic ones.

In this sense, while in the case of a good-sized company, a loan may derive from a need for liquid funds (which is why we often see the use of bank loans), equity funding (in all its many forms) represents a different financing solution, a real investment that remains within the company, thanks to the exchange of company shares and capital, with the aim of stimulating the development of the company.

The effects on the growth of traditional equity funding instruments (venture capitalists and business angels) have already been extensively treated in the literature (reported in the literature review respectively in chapters 2.3.1 performances of BAs-backed firms and 2.3.2 performances of VCs-backed firms). As far as Equity Crowdfunding is concerned, the discourse changes slightly, in fact given its recent diffusion, there are fewer studies regarding the relationship between its use and the subsequent growth of the company.

Eldridge, Nisar and Torchia (2019) examine the impact of Equity Crowdfunding on innovation and growth opportunities within small and medium-sized enterprises. The study was based on a sample of Fame BVD data on small businesses operating in the UK and the results showed that crowdfunding does not have a significant influence on innovation but there is a significant positive correlation with growth opportunities. Growth was analysed by taking into account both non-monetary parameters and the company's financial performance, thus denoting all-round growth.

Another interesting study is the one conducted in 2019 by Cho H., Park J.Y. and Sung C.S., whose purpose was to identify the difference in business performance and employment growth between successful and failed capital acquisition through equity-based crowdfunding. The study was based on an empirical analysis using a sample formed

by Equity Crowdfunding campaigns in South Korea in 2016. The authors showed that: "the survival rate, the growth rate of sales, the growth of profitability, the absolute employment growth and employment growth rate of successful crowdfunding companies are higher than those of unsuccessful crowdfunding companies. However, from the analysis of the differences, we do not find a significant difference in the survival rate, in the rate of sales growth and profitability growth between crowdfunding successful companies and crowdfunding failing companies. We find that absolute employment growth and employment growth rate are significantly higher for companies that have been successful in crowdfunding. crowdfunding projects compared to companies that have not done so".

There is therefore a relationship between Equity Crowdfunding and company growth, in a similar way to traditional equity funding instruments. However, how is it possible to explain this analogy, given the substantial differences that this instrument has compared to traditional ones? In fact, VCs and BAs are professional investors, who possess vast strategic and business management skills, as well as great economic resources. The investments of these professionals are exponentially higher than the average of investments deriving from Equity Crowdfunding and the resulting contribution of skills within the company is able to direct a start-up with great potential to a large success. ladder. The characteristics of crowdfunding are decidedly different, the capital raised is lower and the presence of professional investors is mandatory, but the great majority of investors in the campaigns derive from the "crowd" and often do not have specific skills. For this reason, with our analysis we intend to enrich this debate by identifying characteristics of Equity Crowdfunding that have not yet been explored in order to give our interpretation of why this phenomenon, despite the differences with traditional tools, favours the growth of start-ups that decide to use it.

Our hypothesis will be based on the solid relationship between the quality of human capital and company growth (chapter 2.3.4 "Human capital role in firm's growth" of the literature review), trying to hypothesize why this relationship could be one of the main causes of company growth also within Equity Crowdfunding.

In this sense we were inspired by a study by Colombo and Grilli (2010) which analysed the relationship between obtaining an investment by VCs and company growth. In fact, we believe that given the different characteristics between the various financing instruments, it may be interesting to take up this idea in a different context, to verify

whether the differences between the instruments translate into differences also in the results obtained.

3.2.1 The “Direct Effect”

The authors carried out a study on 439 Italian NTBFs analysing the effects of human capital and of the loans received by VCs on the growth of the company, measured by the number of employees and the increase in sales. In particular, the relationship between human capital and company growth after the investments of VCs has been studied taking into consideration two different effects. The first effect is the so-called direct effect of human capital on growth, which is based on the so-called competence-based view that we can find in the literature: a higher quality human capital possesses distinctive characteristics (in terms of skills, experiences and innate abilities) that allow a company to grow more and faster than those with a lower level human capital. The main contributions on which this analysis can be based are those derived from the seminal studies of Knight (1921) and Schumpeter (1934) and usually argue that firms are bundles of unique and difficult to imitate capabilities that are the main source of their advantages sustainable competitiveness (e.g., Grant, 1996). For this reason, the distinctive capabilities of firms (or the lack of them) can explain growth differentials.

In particular, in the case of NTBFs, or innovative start-ups, these distinctive abilities are closely linked to the knowledge and skills of their founders, and consequently to the quality of the corporate human capital (Cooper and Bruno, 1977; Feeser and Willard, 1990; Colombo and Grilli, 2005a). Within a business environment such as the one from which start-ups derive, which is almost always very uncertain, it is not uncommon for an individual to grasp a new business income. To try to realize this opportunity, the individual is forced to create his own business, due to the idiosyncratic and non-contractual nature of entrepreneurial judgment (Foss, 1993; Hodgson, 1998; Alvarez and Barney, 2002). To ensure that this opportunity translates into a successful business, however, it is necessary to combine and integrate complementary knowledge, both generic and context-specific (for example technological, marketing and managerial knowledge) that are generally dispersed among different individuals. A simplistic solution that the founder can adopt is to hire these individuals, in order to fill the necessary skills gap, however, integration and coordination of knowledge is more effective if the

individuals who possess it are members of the founding team. and therefore, participate in the profits of the firm. Colombo and Grilli (2010) add that "individuals who have higher levels of education, greater work experience, especially in the same sector as the new firm (i.e., sector-specific human capital) and greater entrepreneur-specific human capital developed through a managerial position in another company or in previous self-employed episodes of employment, they are likely to have better entrepreneurial judgment and more specialized knowledge than other individuals". They are therefore in an advantageous position in making strategic decisions and managing opportunities, thus increasing the likelihood of success and growth of the company.

We believe that it is interesting to re-propose the study of this direct effect also in the case of Equity Crowdfunding, in fact a company that decides to use this tool, in the case of a successful campaign, obtains the capital it needed, but in most cases, the investors who made the financing possible are not professionals in the sector and the few professional investors present do not have the experience and skills of VCs fund managers. Due to these reasons, it is plausible to think that the human capital present in the company plays an even more important role within Equity Crowdfunding than in the case of using other financing instruments, as the company receives a more fragmented contribution of skills. and less decisive than in the case of VCs and BAs.

In accordance with the competency-based argument and the study of Colombo and Grilli, we propose the following hypothesis.

Hypothesis 2: *The quality of the human capital of the company has a direct positive effect on the growth of innovative start-ups after an Equity Crowdfunding campaign.*

3.3 Influence of Professional Investors on Post-Campaign Performances

The final hypothesis of our paper aims to analyse once again the post-campaign performances, but shifting the focus from the relationship with the characteristics of the human capital present in the company to another fundamental element for the success of Equity Crowdfunding: investors.

These are not attributable to a single category (as already explained in the literature review), but possess different skills and characteristics.

Before being able to analyse the relationship between different characteristics of investors and the post-raising performances of companies that have used the ECF, it is useful to understand how different investors can first influence the success of the campaign itself: in fact, the success of a campaign and the consequent collection of capital are a vital factor for the survival of the company and the increase of its performance. To do this we can exploit a solid theoretical basis, often used in studies of this type (for example by Colombo and Grilli themselves in 2010) and which we want to propose again. A good place to start is the pioneering studies of Jaffee and Russell (1976) and Stiglitz and Weiss (1981), thanks to which the argument that there are imperfections in capital markets that make external financing expensive and limit investment decisions has been gaining ground in the finance literature (see Fazzari et al., 1988 and the literature cited in Hubbard, 1998). These imperfections of the capital markets are particularly important in the case of innovative start-ups (Carpenter and Petersen, 2002a), in fact investors find themselves in a situation of almost total uncertainty, struggling to estimate risks and returns of projects, also due to a poor or absent track record that characterizes companies based on emerging technologies. In this case we find ourselves in the presence of a classic problem of adverse selection, since the information available to the company is different from the one available to investors, who cannot recognize with certainty a high quality NTBF from a low quality one. The second problem for investors is the one of post-financing monitoring, difficult in the high-tech sectors, to which is added a problem of moral hazard.

One of the solutions proposed in the literature to combat these problems is the use of guarantees (Berger and Udell, 1998). In the case of innovative start-ups, however, these guarantees are limited, especially due to the intangibility that characterizes their assets. For these reasons, it is not easy for NTBFs to obtain external funding, and most NTBFs therefore rely on personal capital (i.e., savings from founders and capital provided by family and friends, Berger and Udell, 1998). However, the limited nature of this funding does not allow NTBFs to grow as fast as is the case with adequate external funding (Carpenter and Petersen, 2002b). In the case of VC investors, thanks to the skills available to them, there is less exposure to these problems, thus being able to select high quality NTBFs (Gompers and Lerner, 2001; Denis, 2004). Based on the corollary that VC-backed NTBFs grow faster than other NTBFs, let's say that NTBFs with entrepreneurial teams composed of individuals with higher human capital will be more likely than other NTBFs to attract VC investments and, consequentially, grow.

In the case of Equity Crowdfunding, the problems of moral hazard and adverse selection are not completely eliminated from the competencies of investors. In fact, professional skills are not always comparable to those of VCs, while non-professional ones may not even possess any skills. Despite this, if we take as a reference several recent studies, such as that of Zhang et al. (2016), we note that the authors have shown that corporations and institutional investors such as venture capital firms and angel investors represent a large chunk of crowdfunding investors. In particular, Business Angels are the type of professional investor who most frequently operates on Equity Crowdfunding platforms. There is a report from the British Business Bank (2018) which found that if we look at the UK, on average, 35% of business angels have co-invested in an Equity Crowdfunding campaign. There are also platforms that have released interesting data related to their campaigns, such as Crowdcube which claimed that 9 VCs have invested in campaigns on their platform.

According to Hellmann and Puri (2002), the role of professional investors is different from the others, in fact after the financing they are involved in the company and start a professionalization process for start-ups. This process includes several activities, such as mentoring and guidance, support in recruiting prestigious underwriters, and easy access for customer and supplier acquisition (Cumming and Zhang, 2017; Gompers and Lerner, 2009; Hertzels and Smith, 1993; Jain and Kini, 2000).

Unlike professional investors, small investors, the "crowd," have limited opportunities to do due diligence on crowdfunding projects, mainly due to the associated costs. In addition to this, they do not possess the skills to evaluate the soundness of an investment (Ahlers et al., 2015), thus ending up taking high risks. The information advantage of professional investors is therefore considerable (Signori and Vismara, 2018), both for the quantity of information they possess, and for the quality of the information and the ability to interpret it in the best possible way. These differences create possibilities for collaboration: well-informed third parties can certify the quality of a company to less experienced external investors (King et al., 2005; Podolny, 1993). There are many studies on this relationship, particularly for the IPO process, which have shown that connections with prestigious underwriters (Beatty and Ritter, 1986; Carter and Manaster, 1990; Carter et al., 1998), venture capitalists (Brav and Gompers, 1997; Megginson and Weiss, 1991), business angel (Bruton et al., 2009) and alliance partners (Baum and Silverman, 2004; Stuart et al., 1999) generally increase the success of the IPO.

Following this reasoning and bringing it back to the world of Equity Crowdfunding, it is easy to think that prestigious subscriptions by professional investors can drag a following of other investors, even non-professional ones. These assumptions are supported by recent studies that have suggested that most crowd investors, albeit inexperienced, are able to identify and exploit the nuanced differences in early investor core competencies (Kim and Viswanathan, 2019). Beyond that, the quality and amount of funding received in the past is information that crowd investors scrutinize (Drover et al., 2017b).

The worst case that can derive from this phenomenon is the outcome of a campaign that does not reflect a rational aggregation of information, but which depends exclusively on the opinion of those who arrived at the beginning of the campaign and chose to invest (or not invest) (Shiller, 2015).

However, this phenomenon has recently been investigated by Kim and Viswanathan (2019), who have shown that the information aggregation process is used by the crowd only in the total lack of skills to evaluate a project.

In summary, professional investors are able to recognize a successful business project (be they a BA, VC or any other investor) and positively influence non-professional investors.

If the number of investors within a campaign increases, the likelihood of success also increases.

Hypothesis 3: *the number of professional investors is positively correlated with the post-campaign financial performances of the company.*

4 Data Collection

The data collection process has focused from the beginning on the Equity Crowdfunding ecosystem in Italy. This geographical choice was dictated by the fact that the Italian market is certainly the one characterized by the greatest availability of data for the authors.

The starting point was to obtain the database of the Politecnico di Milano Observatory with all the main data of the Equity Crowdfunding campaigns carried out in Italy from January 2014 to March 2021. It contains all the general information, companies and their respective campaigns, in particular:

- **Company name:** this is the name of the company registered in the "business register", the site of the Italian chamber of commerce. For those companies that have done more than one Equity Crowdfunding campaign, after the name there is a number (in brackets) indicating which campaign is referenced (for example "ABC" indicates the first campaign of the company ABC. "ABC (2)" instead indicates the second campaign of the ABC company, and so on).
- **Tax Code (Codice fiscale):** it is a numerical code consisting of 11 digits that uniquely indicates each Italian company. This code was the key to every database search.
- **Province:** the Italian province in which the company resides.
- **Round > 1:** section that indicates whether it is the first campaign of a company or whether it is a subsequent round. In this section the values are binary only: 0 if it is the first campaign or 1 if it is one of the following. It has the same function as the number in brackets next to the company name previously explained, with the advantage, however, of an easier search process within the database.
- **Type of company:** this section indicates which type of company is considered. This can be "PMIInn" (or "Innovative small and medium-sized enterprise"), "SUIInn" (or "Innovative Start Up") or "VEIC" (or "Investment vehicle").
- **Portal:** indicates the portal on which the Equity Crowdfunding campaign was carried out. These are: 200Crowd, Action Crowd, BacktoWork24, Build Around, Cofyp, Concrete, Crowdfundme, CrowdInvest Italia, Doorway, Ecomill, EquityStartUp, Extra Funding, Forcrowd, Fundera, Hensoo, House4Crowd, Idea Crowdfunding, Investi-Re, LifeSeeder, Lita. co, MamaCrowd, Muum Lab,

MyBestInvest, Next Equity, OPStart, Smarthub, StarsUp, Start Funding, The Best Equity, Unica Seed, Walliance, WeAreStarting.

- **Project:** brief description of the company's project. This item was particularly useful during external searches, since many times websites indicate the name of the project rather than the name of the company.
- **Real estate:** in this section there are binary values, 0 and 1, depending on whether the project is real estate (1) or not (0).
- **Target capital:** is the minimum amount of capital that the company must raise during the campaign. If the threshold is not reached, the campaign will be considered "unsuccessful".
- **Percentage of equity offered.**
- **Type of share offered:** this section describes the types of shares that the company offers to investors. Generally, companies always offer non-voting shares in the case of small investments, but with the possibility of becoming voters if the number of shares purchased exceeds a certain amount, which varies from company to company. However, it also happens that the shares offered are simply ordinary, without distinction based on the investment subscribed (and therefore the number of shares purchased).
- **Start date and end date:** these are the start and end dates of the campaign. They are among the most important information available as they indicate the start of the analysis period.
- **Minimum payment:** it is the minimum share that can be subscribed for a non-professional investor. This value varies depending on the company considered.
- **Raised capital (if successful):** this value indicates the amount of capital raised in the event that the campaign was successful. Obviously, for campaigns that failed, this value becomes 0.
- **Number of investors (if successful):** this value refers to the number of investors who contributed to the raising of capital during the campaign. As in the previous case, for unsuccessful campaigns, this value is 0.
- **Pre-money value:** the value of the company before the Equity Crowdfunding campaign.
- **Post-money value:** the value of the company after the Equity Crowdfunding campaign.

In this database there are also other data that will not be cited as they are not relevant during the research work.

Once the collection of these data has been completed, we have focused on completing the missing data of interest. For this purpose, we have relied on four sources of information: the database with all the documents provided by the companies before the start of the Equity Crowdfunding campaigns, the Investors Database of the Crowdfunding Observatory of the Politecnico di Milano, AIDA, LinkedIn and the data from ISTAT (National Institute of Statistics).

The first is a database that was provided to us by the Crowdfunding Observatory of the Politecnico di Milano and includes, for each company:

- **Information document:** the document that contains an overview of all the essential information that an investor must know before proceeding with the purchase of the offered shares. The risks relating to the offer, a description of the offering company, the type of units offered, the language (or languages, if more than one) in which the information is communicated and the terms and conditions of the offer are indicated inside.
- **Document of the capital increase:** drawn up by a notary in which the shareholders' meeting approves the capital increase. Here you will find all the information concerning this extraordinary corporate deed.
- **Company Bylaws:** contains all the rules of a company and the rules governing relations between the members and the association itself.
- **Financial statements of previous years:** useful for an investor to know the results of a company in the years preceding the Equity Crowdfunding campaign. It may happen that there is no balance sheet when the company is in its first year of operation.
- **Deed of incorporation:** it is the official deed of incorporation of the company.
- **Chamber of Commerce registration:** a document drawn up and updated by the Chamber of Commerce that contains all the data relating to Italian companies registered in the Business Register.
- **Business Plan:** document used by companies to summarize its strengths and strategies. In it, the company describes its history, presents the project and the market to which it belongs, the team and gives information on the use of any funds raised, also making predictions on the possible results it will achieve in subsequent years. This is the most important document for attracting investors.

- **Other documents:** there may be, depending on the case, additional documents that the company decides to provide to potential investors, such as the team members' patents, certificates and CVs.

AIDA (acronym for Analisi Informatizzata delle Aziende Italiane, which means Computerized Analysis of Italian Companies) is an online database, produced by Bureau Van Dijk, which contains financial, personal and commercial information on about one million Italian companies. Within it we have collected turnover, profits and ATECO codes of the companies of interest. In particular, we were interested in the turnover of the year preceding the campaign (year -1), of the year of the campaign (year 0) and of the following year (year 1). In the event that the company was founded in the campaign year, the previous ones were considered null, and therefore we entered the value 0.

The Investors Database is a database held by the Crowdfunding Observatory of the Politecnico di Milano where there are all the data concerning the investors of the Equity campaigns Crowdfunding in Italy. This contains both company data such as the name and portal used for the campaign with start and end dates, as well as investor information:

- **Investor type:** this section indicates whether the investor is a natural person (PF) or a legal person (PG).
- **Serial investor:** this column shows a binary value (0 or 1) depending on whether the investor is serial or not.
- **Number of investments:** the number of total investments that the investor has made in the various Equity Crowdfunding campaigns is shown here.
- **Number of serial investors:** indicates the number of serial investors who have invested in the campaign under consideration.
- **Name and surname:** name and surname of the investor. In the case of a legal person, the name of the company is indicated.
- **VAT tax code.**
- **Subscribed amount:** the amount of capital invested by the investor.
- **Existing shareholder:** this item indicates whether the investor was already a shareholder of the company before subscribing to the investment during the Equity Crowdfunding campaign.
- **Age:** age of the investor at the time of the investment. In the case of a legal person, this entry remains empty.

- **Gender:** indicates whether the investor was male or female. As before, in the case of legal personality this item remains empty.

Finally, LinkedIn is a social network mainly used in the development of professional contacts and in the dissemination of specific content relating to the job market.

To conclude the collection of information relating to the company, we have tried to expand the data available to us by integrating other aspects of interest for the analysis.

In this sense, the starting point has been identified in patents. To understand if the companies considered were provided with them, we searched within the documents of the campaigns. In some cases, such as the MamaCrowd portal, the presence or absence of a patent is explicitly written in the information document. In other cases, however, a copy of the document certifying the patent is available among the documents or is expressly indicated in the business plan. For the few remaining exceptions, we carried out research on the net to understand whether the company was in possession of a patent or not. However, in most cases the patent was not present since the project consisted of non-protectable ideas, such as applications, portals or websites.

This first part of data collection ended with the identification of the income level of the province to which the companies participating in the campaigns belong (data available in the ISTAT database) and with the count of the documents provided by the companies being collected. To identify this data, we simply counted the number of documents available for each campaign on the database of the Crowdfunding Observatory of the Politecnico di Milano.

After the collection of data relating to campaigns and company performance, we dedicated ourselves to the human capital variables. We followed a well-defined process to find this information. First of all, we searched for the project on its portal (for example “XYZ Mamacrowd” on Google) in order to find its web page. Here, in most cases, after registering, you have access to a section called "Team" in which there is a description of the role in the company, previous experiences and very often also a link to the LinkedIn profile. Where this data was not available, we relied on documents such as the business plan, the company certificate and the deed of incorporation, to understand who the team members were and which of them contributed to the founding of the company. Once we

found the founders of the start-up, we searched for names on LinkedIn to understand their professional and university career. In some sporadic cases, the lack of this information was handled by searches on other websites or social networks. The result of this process was the collection of the following information:

- ***Number of members of the entrepreneurial team.***
- ***Average years of study of the entrepreneurial team:*** the beginning and end of an individual's study path on LinkedIn is not always indicated and consequently we had to use approximations. We considered 0 for those who have not continued their studies after high school, 3 for those who have obtained a bachelor's degree, 5 for those who have obtained a master's degree, 6 for those who have completed a master's degree after the master's degree (such as example an MBA), 7 for those who have done a PhD and 11 for those who have obtained a degree and specialization in medicine.
- ***Business degree:*** the number of founders who have a degree in business or management engineering.
- ***Communication degree:*** the number of founders who have a degree in communication or marketing.
- ***Degree related to industry:*** the number of entrepreneurs who have obtained a degree other than those mentioned above but which is connected to the industry in which the company operates (for example a degree in biology for an entrepreneur who has started a start-up in biotechnology industry).
- ***Degree not related to industry:*** the number of founders who have obtained a degree other than those mentioned above but which is not connected to the industry in which the company operates (for example a degree in literature for an entrepreneur who has started a start-up in the food delivery industry).
- ***No degree:*** how many members of the entrepreneurial team have not earned any degree after high school.
- ***Entrepreneurial experience:*** how many founders had already opened or founded a company previously.
- ***Years of entrepreneurial experience:*** how many years of entrepreneurial experience the founders had prior to the campaign.
- ***Work experience:*** we collected data relating to the work experience of the founders, divided into economics / consulting, IT, communication, law,

experiences related to industry and experiences not related to the industry in which the company operates.

- ***Number of companies founded***: how many different companies had been founded by the members of the entrepreneurial team.
- ***Experiences abroad***: if the members of the entrepreneurial team had had work or study experiences in countries other than Italy.
- ***Presence of women in the team***.

5 Variables Selection

After presenting the hypotheses that this thesis aims to analyse and describe the process of collecting data useful for this purpose, in this chapter we will introduce the different variables that have been chosen to carry out this study. The variables considered for this thesis belong to four main groups, which are: dependent variables, control variables, independent variables and instrumental variables.

5.1 Dependent Variables

Given the ambition of our work, which does not intend to limit itself to the study of a single phenomenon, the hypotheses we created required the use of two different dependent variables, in particular one for the first model and a second for the remaining two, which will be analysed in chapter 5.

First, we indicate the dummy variable *d_success*. A campaign is considered successful if it reaches the funding goal, commonly called the target. If the campaign reaches or exceeds this threshold, this variable gets the value 1; otherwise, the value is set to 0.

The second dependent variable, *difflog*, will be used in the second and third models. The choice of this variable derives from the need to identify a good proxy for business growth and was identified, as the name suggests, through the difference of the natural logarithm in annual post-campaign and pre-campaign turnover.

This variable was preferred to the percentage of turnover growth, which is used in most cases in the literature, as in the case of young companies and start-ups this data can create confusion (it is not uncommon to find zero or very low turnover, which exponentially increases the percentage of growth compared to other companies with higher turnover).

5.2 Independent Variables

To measure the impact of the different characteristics of human capital on the success of the campaign, we analysed the founding team of each company using the business plans on the different platforms. In particular, we have selected a first group of independent variables that will serve to test the first two hypotheses.

This first set of variables evaluates the corporate foundation team both for the types of qualifications achieved and for the entrepreneurial experience in general. In particular, through the variables *perc_business_degree*, *perc_communication_degree* and *perc_industry_degree* we calculated the percentages of individuals with a degree in business, in the sector of competence of the company or in communication. For the entrepreneurial experience we did not use a variable calculated as a percentage but rather the average years of experience of the entire team, expressed by *avg_years_entrepreneurial_exp*.

These variables are intended to assess whether start-ups that have human capital with greater skills and qualities have a greater chance of success in an Equity Crowdfunding campaign and subsequently, if they stimulate post-campaign business growth - Hypothesis 1a, 1b, 1c and 2.

This variable aims to study the moderating effect of company age on the characteristics of human capital that influence the success of campaigns - *Hypothesis 1c*.

The last independent variable differs from the first two, as it was created to understand the characteristics of investors and their relationship with company growth, which occurs after a successful campaign. In particular, *ser_investors* indicates the number of serial investors who participated in the campaigns. Thanks to the use of this variable we will be able to study the influence of professional investors on the growth of corporate performance once the ECF campaign is over (Hypothesis 3).

5.3 Control Variables

In order to rule out factors that could explain campaign performance and subsequent business growth, we use multiple control variables. Overall, we have included metrics that can influence Equity Crowdfunding success and subsequent business growth, also based on research from other authors.

In a very similar way to the creation of the other variables, thanks to the data available to us, such as the curricula vitae of the founders or the URL of the LinkedIn accounts in the project descriptions and business plans, we were able to enrich the models and arrive at the following evaluation.

Based primarily on the literature available on Equity Crowdfunding, or in general on the research carried out on entrepreneurial finance, we have defined a series of control variables that study different characteristics of the foundation team. The first variable chosen is *n_founders*, which is the number of people who founded the company. Reporting the study of Colombo and Grilli (2005), given the level and nature of the human capital of founding teams, the larger the number of founders the greater the tangible and intangible resources at their disposal, including financial resources.

Subsequently, not wanting to neglect the gender of the entrepreneur, which can affect the success of a crowdfunding campaign (Mohammadi and Shafi 2017) we have included *d_pink_quota*, a dummy variable of the value of 1 if there is at least a woman in the entrepreneurial team or contrary to the value 0. These data are easily found in the documents provided in the campaigns or on the websites of the same.

Two other control variables that we decided to include in our model were *d_education_abroad* and *d_experience_abroad*. Also in this case dummy variables that assume a value of 1 if at least one member of the entrepreneurial team has studied or worked in countries other than Italy. In fact, a work or study experience abroad and the political background of the founders influence the decision of an investor (Tang, Wang, Chen, Huang 2017).

Second, as prior studies show that having broad competences and, especially, different functional experience within the team of entrepreneurs makes a start-up more attractive to external investors (e.g., Kaplan and Strömberg 2004), we include two measures of competence heterogeneity within the team: *d_heterogeneous_education* and *d_heterogeneous_experience*. The first equals 1 if the focal entrepreneur and her teammates graduated in different fields and 0 otherwise. Instead,

d_heterogeneous_experience equals 1 if the focal entrepreneur and her teammates gained work experience in different areas and 0 otherwise.

The last control variable on human capital has already been presented within the independent variables: *avg_years_entrepreneurial_exp*. Indeed, in the model used to test H3, this variable is used as a control.

Once we have finished the control variables closely linked to the characteristics of the entrepreneurial team of each specific campaign, we have completed the discussion with other characteristics that can be traced back to broader discourses, such as the company as a whole or the campaign.

Precisely for this purpose, we found it very interesting to insert a dummy variable *d_patent*, with the value of 1 if a company has been granted a patent. In fact, despite several characteristics that a company may possess, patents are often a common factor and according to general consensus, they help companies to grow by conferring monopoly market rights, providing protection from competition and improving the bargaining power of patent holders. Several authors such as Hoenen et al. in 2014, they showed that companies filing patent applications received significantly more capital for their first round of funding. Therefore, the ability to lay claim to technology claims is a crucial early signal of a start-up's future potential. By signalling innovative capabilities, patents help start-ups acquire additional resources, increasing the strength of this signal (Baum and Silverman, 2004; Hoenig and Henkel, 2015).

We then used *company_age*, which is the number of years that have passed from the company's foundation to the campaign. In the first hypothesis this variable, combined with *perc_business_degree* and *avg_years_entrepreneurial_exp*, was used to test the moderating effects on human capital. However, it is probable that older companies are better developed and are perceived as less risky, so, being able to influence the outcome of ECF campaigns, we decided to consider it as a control variable in the other models. This variable also explains the fact that older firms are more likely to have acquired resources and capabilities (Islam et al., 2018).

The number of total documents that the entrepreneur has published on the platform is an inverse proxy of the extent of the information asymmetries faced by potential investors (Piva and Rossi Lamasra, 2018). The greater the number of documents that an entrepreneur makes available online, the fewer these information asymmetries and the

greater the probability that the entrepreneur will be able to raise their own funds through crowdfunding, which is why we have inserted the *documents_provided* variable.

For the set of control variables, we also took into consideration characteristics external to the company in question. In line with previous studies on successful drivers in Equity Crowdfunding (Ahlers et al. 2015; Vismara 2016a, b), we wanted to include a variable related to the target capital of the campaign launched by the focal entrepreneur, considering its logarithm (*ln_target*).

Finally, taking a cue from the paper by Colombo and Grilli (2010), who used the level of infrastructures as a control variable relating to the external environment, we wanted to insert a variable capable of considering the differences in context that different Italian areas may offer. Through *ln_income* we have identified the average income for each province to which the companies belong, then calculating the natural logarithm to obtain an adequate proxy.

5.4 Instrumental Variables

The last type of variable we used falls into the category of instrumental variables (IV). This, not visible in the outputs of the models presented in chapter 6.2.2, was necessary to treat the endogeneity of the variable *d_success* in the 2SLS model. The variable we decided to use as IV was *perc_prov*. This, having to be correlated to the *d_success* variable and not correlated to the *difflog* variable, represents the percentage of companies that have carried out an Equity Crowdfunding campaign in a given year and in a given province, out of the total of companies that could potentially have done the same. For further information on practical and theoretical use, please refer to chapters 6.0.2 and 6.2.2.

6 Models Implementation

Before proceeding with the analyses carried out and the relative results, we briefly present an overview of the econometric models that we will use in the following chapters.

6.0.1 OLS

Ordinary least squares (OLS) is a statistical analysis method that estimates the relationship between a dependent variable and one or more independent variables.

In particular, the OLS model is based on the principle of least squares: the sum of the squares of the differences between the values of the observed dependent variable and those predicted by the linear function is minimized. Geometrically, this is seen as the sum of the squared distances, parallel to the axis of the dependent variable, between each given point in the set and the corresponding point on the regression surface. The smaller the differences, the better the model fits the data.

The resulting estimator can be expressed with a simple formula, especially in the case of a simple linear regression, where there is only one regressor to the right of the equation:

$$y = \beta_0 + \beta_1 x + u$$

The OLS estimator is consistent when the regressors are exogenous, and it is optimal in the class of linear unbiased estimators when the errors are homoscedastic and serially uncorrelated. Under these conditions, the method of OLS provides minimum-variance mean-unbiased estimation when the errors have finite variances. Under the additional assumption that the errors are normally distributed, OLS is the maximum likelihood estimator.

6.0.2 2SLS

In statistics and econometrics the 2SLS (or TSLS, two stages least squares) model is used when the explanatory variable of interest is correlated with the error term u (in this case the variable is defined as endogenous) and therefore the OLS model would give biased results. To eliminate this distortion, an instrumental variable (IV) is therefore used which is related to the explanatory variable (X) in question but which is not related to u . For an instrumental variable (Z) to be valid, it must meet two conditions:

- *Relevance*: $\text{corr}(Z,X) \neq 0$
- *Exogeneity*: $\text{corr}(Z,u) = 0$

To create a 2SLS model, you must first regress X on Z , obtaining an X' value. Subsequently, a new regression of Y on X' is performed, and the coefficient of X' will be the 2SLS estimator, β' . Then β' will be a consistent estimator of β .

6.0.3 Probit

In statistics and econometrics, the Probit model is a non-linear regression model used when the dependent variable can only assume two values, attributable to 0 and 1. The purpose of the model is to estimate the probability that an observation with particular characteristics has a value of 1. It differs from the Logit model in that conditional probability is modelled using the standardized normal distribution function instead of the logistic one. In figure 7 it is possible to see the two curves and their difference.

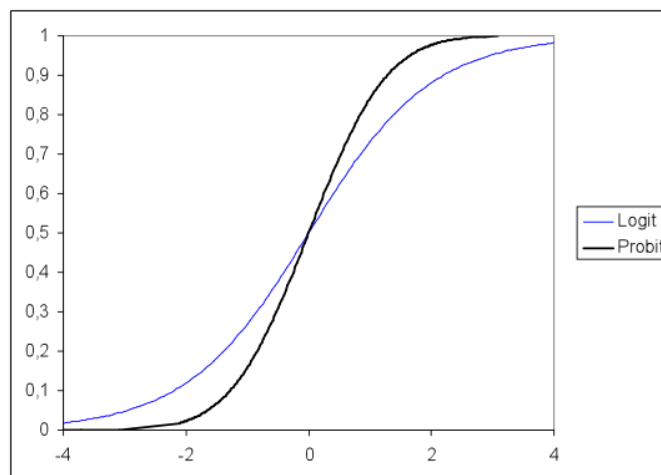


Figure 7: Logit and Probit chart

6.1 Correlation between Human Capital Characteristics and Campaign Success

The analysis of our research work begins with the study of the relationship between the characteristics of human capital and the success of an Equity Crowdfunding campaign. To do this, we will test several variables related to both education and work experience that characterize the entrepreneurial teams of the companies in our sample. By exploiting econometric models, we will analyse whether, as the quality of the human capital present in the company increases (in terms of theoretical and practical skills), the probability of success of the related campaigns increases. Furthermore, by not using a single explanatory variable, it will be possible to understand which of the different characteristics has a greater impact. The abundant number of studies in the literature, cited in paragraph 2.3.5, are in line with our first hypothesis, so we expect consistent results.

Hypothesis 1a: *Entrepreneurial teams with a higher percentage of members with useful degrees are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with fewer useful degrees.*

Hypothesis 1b: *Entrepreneurial teams with more members with entrepreneurial experience are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with less members with entrepreneurial experience.*

6.1.1 Sample of Analysis

The sample used for our first model is represented by 244 campaigns carried out in Italy between 2014 and 2018. The campaigns from 2019 onwards were not considered, as the 2020 budget data, essential for this analysis, were not available. The model chosen to carry out the analyses is a Probit regression, in which we will use *d_success* as the dependent variable, which you find defined in paragraph 5.1.

Table 5 provides descriptive statistics on the explanatory and control variables included in the model. These show some characteristics of the collected data, such as minimum maximum, average or standard deviation. Thanks to their use it is possible to obtain

various useful information on the sample, an example is the *company_age* variable, which with a minimum of 0 and a maximum of 30 demonstrates how ECF is not a tool used only by newly founded firms. The correlation matrix (table 6) shows that there are not anomalous data and confirms the goodness of the model used. Furthermore, thanks to the analysis of the variance factor of inflation (VIF), we note that multicollinearity is not a problem in our case. The average VIF (table 7) is 1.24 and being below the maximum threshold of 5 does not create problems, while the maximum VIF is 1.48, below the threshold of 10 (Kutner et al., 2004).

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>perc_business_degree</i>	244	0,3051	0,3736	0	1
<i>perc_communication_degree</i>	244	0,0477	0,1646	0	1
<i>perc_industry_degree</i>	244	0,1729	0,3230	0	1
<i>avg_years_entrepreneurial_exp</i>	244	4,5577	6,4039	0	35
<i>company_age</i>	244	2,5697	3,1855	0	30
<i>d_education_abroad</i>	244	0,2828	0,4513	0	1
<i>d_experience_abroad</i>	244	0,2582	0,4385	0	1
<i>d_heterogeneous_education</i>	244	0,4180	0,4942	0	1
<i>d_heterogeneous_experience</i>	244	0,4549	0,4990	0	1
<i>d_patent</i>	244	0,3115	0,4640	0	1
<i>d_pink_quota</i>	244	0,2664	0,4430	0	1
<i>ln_income</i>	244	10,2212	0,1641	9,8156	10,4694
<i>n_founders</i>	244	2,3729	1,2457	1	8
<i>documents_provided</i>	244	8,75	2,7902	1	21
<i>ln_target</i>	244	11,7724	0,7750	10,1266	14,2262

Table 5: Descriptive statistics of the variables used to test H1a, H1b and H1c

Variable	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
(a) <i>perc_business_degree</i>	1,0000														
(b) <i>perc_communication_degree</i>	-0,1124	1,0000													
(c) <i>perc_industry_degree</i>	-0,1926	-0,1442	1,0000												
(d) <i>avg_years_entrepreneurial_exp</i>	-0,0392	0,0001	-0,0850	1,0000											
(e) <i>company_age</i>	-0,1349	-0,0225	0,2380	-0,0699	1,0000										
(f) <i>n_founders</i>	-0,1102	-0,0330	0,0396	0,0173	-0,1855	1,0000									
(g) <i>ln_income</i>	0,1449	0,0509	-0,0651	-0,0979	-0,0430	-0,0586	1,0000								
(h) <i>d_pink_quota</i>	-0,1346	0,0130	0,1143	-0,0115	0,0699	0,1996	-0,0396	1,0000							
(i) <i>d_heterogeneous_education</i>	0,0739	0,0984	-0,0136	-0,0801	-0,1048	0,3674	-0,0727	0,1659	1,0000						
(j) <i>d_heterogeneous_experience</i>	-0,1419	0,0342	0,0064	0,0056	-0,1689	0,4608	-0,0584	0,0825	0,3270	1,0000					
(k) <i>d_education_abroad</i>	0,0883	0,0935	0,0117	-0,0849	-0,0495	0,1703	0,0010	0,0333	0,1874	0,0843	1,0000				
(l) <i>d_experience_abroad</i>	0,1008	-0,0508	0,0466	-0,0597	-0,1234	0,1545	0,0778	-0,0166	0,1265	0,0628	0,4405	1,0000			
(m) <i>d_patent</i>	-0,0554	-0,0294	0,3296	0,1516	0,0103	0,0687	-0,1177	-0,0650	0,0221	0,0787	-0,0293	0,0683	1,0000		
(n) <i>documents_provided</i>	0,0351	-0,0124	0,1417	-0,0455	0,1059	0,0707	-0,1238	0,0641	0,0075	0,0200	0,0302	0,0294	0,2829	1,0000	
(o) <i>ln_target</i>	-0,1358	0,0237	0,1395	-0,0509	0,0603	0,0211	-0,0407	0,0043	-0,0959	-0,0143	0,0120	0,0946	0,2716	0,2955	1,0000

Table 6: Correlation matrix of the variables used to test H1a, H1b and H1c

Variable	VIF
<i>n_founders</i>	1,48
<i>d_heterogeneous_experience</i>	1,37
<i>d_patent</i>	1,36
<i>d_experience_abroad</i>	1,32
<i>d_heterogeneous_education</i>	1,32
<i>d_education_abroad</i>	1,32
<i>perc_industry_degree</i>	1,31
<i>perc_business_degree</i>	1,22
<i>documents_provided</i>	1,21
<i>ln_target</i>	1,21
<i>company_age</i>	1,17
<i>d_pink_quota</i>	1,11
<i>perc_communication_degree</i>	1,10
<i>avg_years_entrepreneurial_exp</i>	1,09
<i>ln_income</i>	1,08
Mean VIF	1,24

Table 7: VIF values of the variables used to test H1a, H1b and H1c

6.1.2 Results

The results of the first model are visible in table 8 below. In this case, we have not used any equation to calculate the dependent variable *d_success*, which is a dummy collected by hand.

Variable	β	p-value
<i>perc_business_degree</i>	0,5636	0,045**
<i>perc_communication_degree</i>	0,7281	0,201
<i>perc_industry_degree</i>	0,5297	0,126
<i>avg_years_entrepreneurial_exp</i>	0,0419	0,017**
<i>company_age</i>	0,1011	0,036**
<i>d_education_abroad</i>	-0,3176	0,186
<i>d_experience_abroad</i>	0,4876	0,061*
<i>d_heterogeneous_education</i>	0,4490	0,039**
<i>d_heterogeneous_experience</i>	0,3527	0,106
<i>d_patent</i>	0,1375	0,567
<i>d_pink_quota</i>	-0,4613	0,036**
<i>ln_income</i>	-0,8396	0,162
<i>n_founders</i>	-0,0348	0,702
<i>documents_provided</i>	0,0335	0,405
<i>ln_target</i>	-0,4749	0,001***
<i>constant</i>	13,5994	0,034**
McFadden's pseudo R-squared	0,1657	p-value
		0,000

Table 8: Results of the model used to test H1a and H1b

Before proceeding with the comment on the results obtained, let's try to understand the quality of the model. As we can see from the table 8, the McFadden R-squared is equal to 0.1657; in general, when this value is between 0.15 and 0.4, the model demonstrates

great adaptability. Simulations by Louviere et al. (2000) show that this range is equivalent to the 0.6 - 0.9 range of an OLS model, so we are satisfied with the result.

From the table 8 we can see how some effects of the control variables are in line with the results already obtained in the literature. As documented in some previous studies on Equity Crowdfunding, which use the campaign as a unit of analysis (see, for example, Vismara 2016a, b, Vulkan et al. 2016), the target capital has a negative effect on the probability of success of the campaign, as indicated by the negative coefficient of *ln_target* (p value 0.001). Similarly, the number of entrepreneurs, represented by the variable *n_founders*, does not present any significance, confirming the studies by Ahlers et al. (2015). The *company_age* variable was significant (p-value 0.036) and the positive coefficient confirms that mature companies, being considered less risky thanks to the resources and skills already acquired, are more likely to be financed (Islam et al., 2018). Also the result related to the variable *d_pink_quota* (p-value 0.036) confirms what Mohammadi and Shafi (2017) said about the influence that a female gender member can have in this context. To conclude the study of the control variables, we can see how both *d_experience_abroad* and *d_heterogeneous_education* are significant and have a positive coefficient, perfectly in line with what was stated respectively by Tang, Wang, Chen and Huang (2017) and Kaplan and Strömberg (2004). The remaining controls are not significant at conventional confidence levels.

Moving on to the explanatory variables, only *perc_business_degree*, among the characteristics of human capital related to education, has a positive and significant impact (p-value 0.045) on the probability that an entrepreneur will succeed in Equity Crowdfunding. On the contrary, the degrees in communication and those relating to the company sector are not significant, so we can only partially confirm hypothesis 1a. The last variable is *avg_years_entrepreneurial_exp*, used to test the level of managerial experience of human capital in the company. The p-value is 0.017 therefore the significance level, being below 5%, is to be considered good. The coefficient of the variable in question is positive, which indicates that as the entrepreneurial experience of human capital increases, the probability of success in an ECF campaign increases. This result confirmed what we hypothesized, so we can accept hypothesis 1b.

6.1.3 Moderation Effects

To conclude the first hypothesis, we wanted to investigate a possible moderating effect of company age on human capital variables.

Hypothesis 1c: *Company age has a moderating effect on the correlation between human capital variables and the success of an Equity Crowdfunding campaign.*

In this sense, it was necessary to insert two new variables, called ***busXage*** and ***entr_yearsXage*** and calculated as follows:

$$busXage = perc_business_degree * company_age$$

$$entr_yearsXage = avg_years_entrepreneurial_exp * company_age$$

Arising from a multiplication of existing variables, they were not considered in the correlation matrix of the model. In case of significance of the variables, depending on the coefficient, we will obtain as a result a positive or less moderating effect of the company age on the previously significant human capital variables. Given the diversity of the two new variables, we considered it appropriate to first analyse them individually, and then insert them jointly in a final model.

Tables 9 and 10 therefore show the updated model by inserting the ***busXage*** variable in one case and ***entr_yearsXage*** in the other. As we can see, the new variables do not show any significance, so we cannot confirm what is hypothesized in H1c.

Variable	β	p-value
<i>perc_business_degree</i>	0,8987	0,031**
<i>perc_communication_degree</i>	0,7314	0,202
<i>perc_industry_degree</i>	0,4970	0,155
<i>avg_years_entrepreneurial_exp</i>	0,0424	0,017**
<i>company_age</i>	0,1354	0,033**
<i>d_education_abroad</i>	-0,2936	0,224
<i>d_experience_abroad</i>	0,4708	0,070*
<i>d_heterogeneous_education</i>	0,4607	0,034**
<i>d_heterogeneous_experience</i>	0,3257	0,138
<i>d_patent</i>	0,1458	0,545
<i>d_pink_quota</i>	-0,4754	0,032**
<i>ln_income</i>	-0,8406	0,163
<i>n_founders</i>	-0,0279	0,760
<i>documents_provided</i>	0,0385	0,304
<i>ln_target</i>	-0,4758	0,001***
<i>busXage</i>	-0,1624	0,264
<i>constant</i>	13,4924	0,036**
McFadden's pseudo R-squared	0,1701	p-value
		0,000

Table 9: Moderation effect of the variable *busXage* (H1c)

Variable	β	p-value
<i>perc_business_degree</i>	0,5639	0,045**
<i>perc_communication_degree</i>	0,7281	0,200
<i>perc_industry_degree</i>	0,5408	0,120
<i>avg_years_entrepreneurial_exp</i>	0,0503	0,043**
<i>company_age</i>	0,1128	0,044**
<i>d_education_abroad</i>	-0,3195	0,184
<i>d_experience_abroad</i>	0,4878	0,061*
<i>d_heterogeneous_education</i>	0,4543	0,037**
<i>d_heterogeneous_experience</i>	0,3534	0,105
<i>d_patent</i>	0,1224	0,613
<i>d_pink_quota</i>	-0,4654	0,035**
<i>ln_income</i>	-0,8303	0,167
<i>n_founders</i>	-0,0371	0,684
<i>documents_provided</i>	0,0348	0,352
<i>ln_target</i>	-0,4798	0,000***
<i>entr_yearsXage</i>	-0,0037	0,619
<i>constant</i>	13,5274	0,035**
McFadden's pseudo R-squared	0,1665	p-value
		0,000

Table 10: Moderation effect of the variable *entr_yearsXage* (H1c)

In conclusion, we entered the two new variables jointly to analyse any changes in the results. Even in this case, however, we have not obtained any type of significance of the variables of interest, so, in line with what has already been stated, we cannot accept or reject hypothesis 1c.

Variable	β	p-value
<i>perc_business_degree</i>	0,9212	0,029**
<i>perc_communication_degree</i>	0,7323	0,200
<i>perc_industry_degree</i>	0,5084	0,147
<i>avg_years_entrepreneurial_exp</i>	0,0530	0,038**
<i>company_age</i>	0,1554	0,040**
<i>d_education_abroad</i>	-0,2968	0,220
<i>d_experience_abroad</i>	0,4738	0,069*
<i>d_heterogeneous_education</i>	0,4673	0,032**
<i>d_heterogeneous_experience</i>	0,3248	0,140
<i>d_patent</i>	0,1292	0,594
<i>d_pink_quota</i>	-0,4808	0,030**
<i>ln_income</i>	-0,8294	0,168
<i>n_founders</i>	-0,0299	0,744
<i>documents_provided</i>	0,0399	0,289
<i>ln_target</i>	-0,4832	0,000***
<i>busXage</i>	-0,1724	0,245
<i>entr_yearsXage</i>	-0,0048	0,544
<i>constant</i>	13,41	0,037**
McFadden's pseudo R-squared	0,1712	p-value 0,000

Table 11: Moderation effect of the variables *busXage* and *entr_yearsXage* combined

6.1.4 Robustness Check

To complete the analysis related to our first hypothesis, we decided to subject the model to a robust regression. Through the specific robust command in Stata it was possible to perform this further analysis, without any change of variable with respect to the model presented previously. Below, in Table 12 we have reported the results obtained.

Variable	β	p-value
<i>perc_business_degree</i>	0,5636	0,035**
<i>perc_communication_degree</i>	0,7281	0,233
<i>perc_industry_degree</i>	0,5297	0,109
<i>avg_years_entrepreneurial_exp</i>	0,0419	0,019**
<i>company_age</i>	0,1011	0,011**
<i>d_education_abroad</i>	-0,3176	0,181
<i>d_experience_abroad</i>	0,4876	0,054*
<i>d_heterogeneous_education</i>	0,4490	0,040**
<i>d_heterogeneous_experience</i>	0,3527	0,101
<i>d_patent</i>	0,1375	0,559
<i>d_pink_quota</i>	-0,4613	0,033**
<i>ln_income</i>	-0,8396	0,132
<i>n_founders</i>	-0,0348	0,688
<i>documents_provided</i>	0,0335	0,348
<i>ln_target</i>	-0,4749	0,000***
<i>constant</i>	13,5994	0,021**
McFadden's pseudo R-squared	0,1657	p-value 0,000

Table 12: Model 1 robustness check

The objective of a robust regression is to subject the model to a test to demonstrate its effective goodness, thus being able to give further relevance to what has been obtained. The first data to be analysed is the new McFadden's pseudo R-squared that is unchanged

from the value already obtained, so the considerations made above are valid. Moving on to the results relating to the variables, we can affirm that the statistically significant variables do not change, the p-values have slight variations but none of these are to be considered anomalous (even the p-values of the significant variables *avg_years_entrepreneurial_exp* and *company_age* decrease) and likewise, there are no significant variations in the coefficients. Thanks to this analysis we can therefore be satisfied with the model used, the results of which confirm the acceptance of H1b and partially also of H1a.

6.2 Correlation between Human Capital Characteristics and Post-Campaign Performance Growth

After analysing how the different characteristics of the human capital present in the company can affect the probability of success of a campaign, we can move on to the real argument that distinguishes our thesis from what is already present in the literature.

***Hypothesis 2:** The human capital of the founders has a direct positive effect on the growth of innovative start-ups after an Equity Crowdfunding campaign.*

6.2.1 Sample of Analysis and Function of the 2SLS Model

To carry out this analysis we decided to use the same sample used for the first hypothesis but changing using the 2SLS model (two stages least squares) since, unlike a more common OLS model, it takes into account the endogeneity given by the variable *d_success*, the dependent variable of the previous model, which indicates whether the company in question has received a loan following an Equity Crowdfunding campaign or not. For this reason, in order to carry out the analysis correctly, we had to choose an instrumental variable.

In the 2SLS approach, in a first stage of estimation the regressors are regressed on the instrumental variables, obtaining first stage forecast values. In the second stage, the dependent variable is regressed on the first stage forecast values obtaining the final estimates.

Due to its characteristics, the method of instrumental variables is subject to problems related to the choice of the instrumental variables themselves. Beyond the formal requirements for the functioning of the method (absence of correlation with disturbances), the latter can be identified through considerations strictly related to the problem subject to statistical analysis.

The instrumental variable we chose was *perc_prov*, and represents the percentage of companies that carried out an Equity Crowdfunding campaign in a province in a given year (year of the campaign being analysed), out of the total number of companies that had the requisites for carry out an Equity Crowdfunding campaign in that province and in that

same year. To be clearer we will show an example: in the P province, in the year Y we find 100 different companies. Of these 100 companies, however, only 20 have the requisites to be able to carry out an Equity Crowdfunding campaign (for example they are innovative start-ups or innovative small and medium-sized enterprises). Of these 20 companies, only 2 actually participated in an ECF campaign and therefore the value of the IV we have chosen, in the province P and in the year Y is $2/20 = 0.1$.

After having made this necessary and fundamental premise, we can proceed with the actual model.

The variables used in this model coincide with those used in the Probit model presented in the previous paragraph, with the exception that the variables *ln_target* and *documents_provided* are not present, as obviously they are specific to the explanation of the success of a campaign but not of the growth in turnover. As mentioned above, however, the dummy *d_success* variable has been inserted, which takes into account any funding received by the company.

Tables 13 and 14 show the descriptive statistics and correlations of the variables used in this 2SLS model.

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>d_success</i>	244	0,7131	0,4532	0	1
<i>perc_business_degree</i>	244	0,3051	0,3736	0	1
<i>perc_communication_degree</i>	244	0,0477	0,1646	0	1
<i>perc_industry_degree</i>	244	0,1729	0,3230	0	1
<i>avg_years_entrepreneurial_exp</i>	244	4,5577	6,4039	0	35
<i>company_age</i>	244	2,5697	3,1855	0	30
<i>d_education_abroad</i>	244	0,2828	0,4513	0	1
<i>d_experience_abroad</i>	244	0,2582	0,4385	0	1
<i>d_heterogeneous_education</i>	244	0,4180	0,4942	0	1
<i>d_heterogeneous_experience</i>	244	0,4549	0,4990	0	1
<i>d_patent</i>	244	0,3115	0,4640	0	1
<i>d_pink_quota</i>	244	0,2664	0,4430	0	1
<i>ln_income</i>	244	10,2212	0,1641	9,8156	10,4694
<i>n_founders</i>	244	2,3729	1,2457	1	8

Table 13: Descriptive statistics of the variables used to test H2

Variable	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
(a) <i>perc_business_degree</i>	1,0000													
(b) <i>perc_communication_degree</i>	-0,0940	1,0000												
(c) <i>perc_industry_degree</i>	-0,1926	-0,1333	1,0000											
(d) <i>avg_years_entrepreneurial_exp</i>	-0,0392	0,0161	-0,0850	1,0000										
(e) <i>company_age</i>	-0,1349	-0,0137	0,2380	-0,0699	1,0000									
(f) <i>n_founders</i>	-0,1102	0,0069	0,0396	0,0173	-0,1855	1,0000								
(g) <i>ln_income</i>	0,1449	0,0472	-0,0651	-0,0979	-0,0430	-0,0586	1,0000							
(h) <i>d_success</i>	0,1180	0,0946	0,0559	0,1459	0,0852	0,0299	-0,0799	1,0000						
(i) <i>d_pink_quota</i>	-0,1346	0,0269	0,1143	-0,0115	0,0699	0,1996	-0,0396	-0,1097	1,0000					
(j) <i>d_heterogeneous_education</i>	0,0739	0,1516	-0,0136	-0,0801	-0,1048	0,3674	-0,0727	0,1702	0,1659	1,0000				
(k) <i>d_heterogeneous_experience</i>	-0,1419	0,0495	0,0064	0,0056	-0,1689	0,4608	-0,0584	0,1063	0,0825	0,3270	1,0000			
(l) <i>d_education_abroad</i>	0,0883	0,0597	0,0117	-0,0849	-0,0495	0,1703	0,0010	-0,0041	0,0333	0,1874	0,0843	1,0000		
(m) <i>d_experience_abroad</i>	0,1008	-0,0512	0,0466	-0,0597	-0,1234	0,1545	0,0778	0,0636	-0,0166	0,1265	0,0628	0,4405	1,0000	
(n) <i>d_patent</i>	-0,0554	-0,0497	0,3296	0,1516	0,0103	0,0687	-0,1177	0,0940	-0,0650	0,0221	0,0787	-0,0293	0,0683	1,0000

Table 14: Correlation matrix of the variables used to test H2

Variable	VIF
<i>n_founders</i>	1,48
<i>d_heterogeneous_experience</i>	1,38
<i>d_heterogeneous_education</i>	1,34
<i>d_education_abroad</i>	1,32
<i>d_experience_abroad</i>	1,32
<i>perc_industry_degree</i>	1,32
<i>perc_business_degree</i>	1,21
<i>d_patent</i>	1,21
<i>company_age</i>	1,18
<i>d_success</i>	1,15
<i>d_pink_quota</i>	1,13
<i>avg_years_entrepreneurial_exp</i>	1,11
<i>perc_communication_degree</i>	1,10
<i>ln_income</i>	1,07
Mean VIF	1,24

Table 15: VIF values of the variables used to test H2

As can be seen, the correlation between the variables is generally low. Furthermore, by observing the table 15, it can be seen that even multicollinearity does not represent a problem in our model: the maximum VIF (1.48 of the *n_founders* variable) is well below the critical threshold of 10 and the average VIF (1.24) is much lower than the critical threshold of 5.

6.2.2 Results

Table 16 shows the results of the 2SLS model used to test the second hypothesis. First of all, it is possible to immediately notice how the variable *d_success* is not significant (p-value equal to 0.517) and therefore it is not possible to draw conclusions on the fact that success in an Equity Crowdfunding campaign can be relevant for the growth of turnover in the year following the campaign.

Among the explanatory variables that we have included in the model, we note that *perc_business_degree* is the only one with a fairly high level of significance (p-value 0.039) and with a positive coefficient (2.6371). This means that an entrepreneurial team made up largely of people with a background in economics and management is a relevant factor for the growth following the campaign. As for the variable *perc_business_degree*, then the hypothesis H2 can be accepted.

The other three human capital variables that we went to test, *perc_communication_degree*, *perc_industry_degree* and *avg_years_entrepreneurial_exp*, did not show acceptable levels of significance to draw conclusions (p-values of 0.641, 0.469 and 0.142 respectively). For this reason, the H2 hypothesis cannot be accepted as a whole, but only partially.

Among the control variables in line with the literature that we have decided to include in our model, we note that *company_age* and *d_patent* showed levels of significance useful for our analyses. As for *d_patent*, that is the variable that shows the presence or not of a patent, we can note a level of significance slightly above 5% (p-value 0.053) and positive coefficient (1.2938). This is perfectly in line with the literature: in fact, the presence of a patent leads to an increase in turnover in a time period ranging from 2 to 3 years (Holger, 2001).

The *company_age* variable is also very significant in our model (p-value 0.000), but unlike the previous one it has a negative coefficient (-0.5443). In the literature we find

the famous model of the life cycle of a company that explains how the greatest growth in the company occurs during the initial stages of life, and then stabilizes during the maturity stage (among others, Bartezzaghi, 2010).

Looking instead at the model as a whole we see an R squared of 0.1478. In a 2SLS model with instrumental variables, however, the R squared index has no statistical significance in a 2SLS regression (for more information see Sribney, Wiggins, Drukker, Negative and missing R-squared for 2SLS / IV).

Variable	β	p-value
<i>d_success</i>	3,3215	0,517
<i>perc_business_degree</i>	2,6371	0,039**
<i>perc_communication_degree</i>	0,9284	0,641
<i>perc_industry_degree</i>	-0,8330	0,469
<i>avg_years_entrepreneurial_exp</i>	-0,1131	0,142
<i>company_age</i>	-0,5433	0,000***
<i>d_education_abroad</i>	-0,0584	0,942
<i>d_experience_abroad</i>	-0,1636	0,849
<i>d_heterogeneous_education</i>	-0,8273	0,430
<i>d_heterogeneous_experience</i>	0,9608	0,248
<i>d_patent</i>	1,2938	0,053*
<i>d_pink_quota</i>	0,2162	0,826
<i>ln_income</i>	1,8772	0,353
<i>n_founders</i>	-0,3817	0,167
<i>constant</i>	-16,2506	0,459
R-squared	0,1478	p-value
		0,000

Table 16: Results of the model used to test H2

6.2.3 Robustness Check

To verify the robustness of this model we used the robust command on the STATA software. This function allows you to automatically obtain the robust regression of the model used, which is very useful for verifying the results obtained. The results of the robust 2SLS regression are shown in table 17.

Variable	β	p-value
<i>d_success</i>	3,3215	0,458
<i>perc_business_degree</i>	2,6371	0,035**
<i>perc_communication_degree</i>	0,9284	0,706
<i>perc_industry_degree</i>	-0,8330	0,454
<i>avg_years_entrepreneurial_exp</i>	-0,1131	0,111
<i>company_age</i>	-0,5433	0,005***
<i>d_education_abroad</i>	-0,0584	0,938
<i>d_experience_abroad</i>	-0,1636	0,838
<i>d_heterogeneous_education</i>	-0,8273	0,419
<i>d_heterogeneous_experience</i>	0,9608	0,269
<i>d_patent</i>	1,2938	0,054*
<i>d_pink_quota</i>	0,2162	0,828
<i>ln_income</i>	1,8772	0,331
<i>n_founders</i>	-0,3817	0,166
<i>constant</i>	-16,2506	0,431
R-squared	0,1478	p-value
		0,000

Table 17: Model 2 robustness check

As can be seen from the model output, no variables have been added, replaced or removed. The results of the robust regression are very similar to the original model: changes in p-value are minimal and do not change the significance of any variable. So, in

conclusion, it can be said that the results obtained with this change allow us to confirm the hypothesis H2 as regards the variable *perc_business_degree*, and neither accept nor reject the hypothesis H2 as regards the other three variables of human capital.

6.3 Serial Investors and Growth after the Equity Crowdfunding Campaign

The final part of our research work moves away from the study of the characteristics of human capital and focuses on another fundamental component of the crowdfunding process: investors. In particular, the variable that we are going to test is the number of serial investors, a subset of the number of total investors that takes into consideration only professional investors. Thanks to the use of this variables, we will be able to investigate whether the number of professional investors involved is significantly correlated with the future performance of the companies. If the number of serial investors shows a positive correlation with performance, we will obtain a positive and significant coefficient of the *ser_investors* variable. Considering this phenomenon, it is possible to give different interpretations, but the most logical and convincing one in our opinion is that a greater number of serial investors, who do not just finance the company but enrich it with skills and knowledge, can direct the business towards a greater success.

Hypothesis 3: *the number of professional investors is positively correlated with the post-campaign financial performance of the company.*

6.3.1 Sample of Analysis

The sample used for the model campaigns has dimensions compared to the one used for the analyses, as the campaigns considered are only the successful ones (for this reason the number of total observations decreased to 160). The model chosen to carry out the analyses is an OLS regression, in which we will use *difflog* as the dependent variable, which you can find defined in paragraph 5.1.

Table 18 provides descriptive statistics on the explanatory and control variables included in the models. A really interesting figure is the maximum number of serial investors who participated in the same campaign, which is 152. This shows how some projects are capable of attracting really large groups of investors.

Inside the table 19 you can also find the correlation matrix for the explanatory and control variables. Correlations are generally low, except for the control variables related to

training and work experience abroad. This is due to the fact that those who studied in countries outside Italy are more likely to have worked in that same period, however the correlation remains below an acceptable threshold (0.47 the maximum figure). For the sake of completeness, we also performed an inflation factor of variance (VIF) analysis, which suggests that multicollinearity is not an issue in our estimates. In fact, analysing the results, the average VIF is 1.22, very far from the threshold of 5, while the maximum VIF is 1.48, well below the threshold of 10 (table 20).

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>ser_investors</i>	160	18,2063	22,5283	0	152
<i>d_patent</i>	160	0,3438	0,4765	0	1
<i>d_education_abroad</i>	160	0,2625	0,4414	0	1
<i>d_experience_abroad</i>	160	0,2688	0,4447	0	1
<i>d_pink_quota</i>	160	0,225	0,4189	0	1
<i>d_heterogeneous_education</i>	160	0,4875	0,5014	0	1
<i>d_heterogeneous_experience</i>	160	0,5125	0,5014	0	1
<i>n_founders</i>	160	2,4625	1,2126	1	7
<i>company_age</i>	160	2,6562	3,4167	0	30
<i>ln_income</i>	160	10,2136	0,1633	9,8156	10,4355
<i>avg_years_entrepreneurial_exp</i>	160	5,1245	6,4047	0	28

Table 18: Descriptive statistics of the variables used to test H3

Variable	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
(a) <i>ser_investors</i>	1,0000										
(b) <i>d_patent</i>	0,1662	1,0000									
(c) <i>d_education_abroad</i>	-0,0105	0,0168	1,0000								
(d) <i>d_experience_abroad</i>	0,0057	0,0955	0,4714	1,0000							
(e) <i>d_pink_quota</i>	0,0237	-0,0433	0,0527	0,0785	1,0000						
(f) <i>d_heterogeneous_education</i>	0,0462	-0,0477	0,2707	0,1703	0,1632	1,0000					
(g) <i>d_heterogeneous_experience</i>	0,0056	0,1004	0,1556	0,1400	0,1662	0,3258	1,0000				
(h) <i>n_founders</i>	-0,0079	0,0279	0,2653	0,2579	0,2024	0,4027	0,4249	1,0000			
(i) <i>company_age</i>	-0,1360	-0,1781	-0,0941	-0,1209	0,1247	-0,1439	-0,1976	-0,2483	1,0000		
(j) <i>ln_income</i>	-0,1184	-0,0270	-0,0817	0,0223	0,0242	-0,0940	0,0464	0,0150	-0,0702	1,0000	
(k) <i>avg_years_entrepreneurial_exp</i>	-0,0428	0,1226	-0,0776	-0,0264	0,0278	-0,1351	0,0167	-0,0167	-0,0951	-0,0872	1,0000

Table 19: Correlation matrix of the variables used to test H3

Variable	VIF
<i>n_founders</i>	1,48
<i>d_education_abroad</i>	1,38
<i>d_heterogeneous_education</i>	1,35
<i>d_experience_abroad</i>	1,34
<i>d_heterogeneous_experience</i>	1,31
<i>company_age</i>	1,20
<i>d_pink_quota</i>	1,11
<i>d_patent</i>	1,10
<i>avg_years_entrepreneurial_exp</i>	1,07
<i>ser_investors</i>	1,06
<i>ln_income</i>	1,05
Mean VIF	1,22

Table 20: VIF values of the variables used to test H3

6.3.2 Results

The equation of the regression was structured as follows:

$$difflog = \beta_0 + \beta_1 \times ser_investors + \gamma \times controls + u$$

The output of the model is summarized in table 21 below.

Variable	β	t	p-value
<i>ser_investors</i>	0,0335	2,27	0,025**
<i>d_patent</i>	2,8153	3,95	0,01***
<i>d_education_abroad</i>	-0,3839	-0,44	0,657
<i>d_experience_abroad</i>	-0,4700	-0,56	0,578
<i>d_pink_quota</i>	-0,0733	-0,09	0,929
<i>d_heterogeneous_education</i>	0,3413	0,45	0,650
<i>d_heterogeneous_experience</i>	0,4601	0,62	0,535
<i>n_founders</i>	-0,8061	-0,25	0,805
<i>company_age</i>	-0,4023	-3,87	0,000***
<i>ln_income</i>	3,4689	1,70	0,090*
<i>avg_years_entrepreneurial_exp</i>	-0,6280	-1,20	0,233
<i>constant</i>	-31,9298	-1,53	0,129
R-squared	0,2807	p-value	0,000
Adjusted R-squared	0,2272	F test	5,25

Table 21: Results of the model used to test H3

Analysing the results specifically, we can see how the dummy variables relating to education and experience abroad, as well as the presence of women in the team, are not significant. On the contrary, among the control variables considered we note a strong positive correlation between the presence of patents in the company and growth (coefficient 2.815 and p-value 0.01), which is perfectly in line with the literature. For the *company_age* variable, the results are also significant. In this case the coefficient is negative (-0.4023), which indicates that as the company ages increases, growth decreases. This result is probably due to the different characteristics that differentiate young companies from more mature ones. A young company, which usually has a small size and limited resources, uses the ECF as its main financing tool. In case of a successful campaign, it will not be difficult to grow exponentially with a wise use of the capital raised. A mature company, on the other hand, which has been operating for several years, could use ECF campaigns to finance more specific projects or targeted investments, to strengthen or expand the business rather than to run it from scratch. Therefore, even if the campaign were to be very successful, the impact on global growth could be lower. If we take the existing studies in the literature as a starting point, we will notice that several authors (for example Bartezzaghi, 2010) have studied in depth the life cycle of

companies, demonstrating that in the maturity phase, growth is less than in the early stages of life.

The last control variable to show significance is *ln_income*. The coefficient is positive (3.4689), but the relationship is not as strong as in the previous cases, as shown by its p-value (0.090), but an economically more developed context can certainly stimulate and help a business growth process.

Turning to the independent variable, *ser_investors*, we note how the results are perfectly in line with the hypothesis H3. In fact, the variable shows a good level of significance (p-value 0.025) and a positive coefficient (0.033) which confirms the fact that a greater number of professional investors within an Equity Crowdfunding campaign increases the level of performance growth of the company, in the post-campaign period. In particular, the value of the coefficient indicates that a one percent increase in the number of serial investors within a campaign causes an average 0.33% increase in performance growth. Taking a look at the t-ratio for this variable we can see that its value is 2.27, which confirms the possibility of using it to predict the growth of performance.

The model is statistically relevant as the F-test value is high (equal to 5.25) as well as the R-squared (0,2807) and the adjusted R-squared (equal to 0,2272).

At last, in Figure 8 it is possible to observe the Residuals vs. Fitted values plot. The Residuals are all randomly distributed around the value zero, indicating that there aren't relevant biases in the model and the results can be considered reliable.

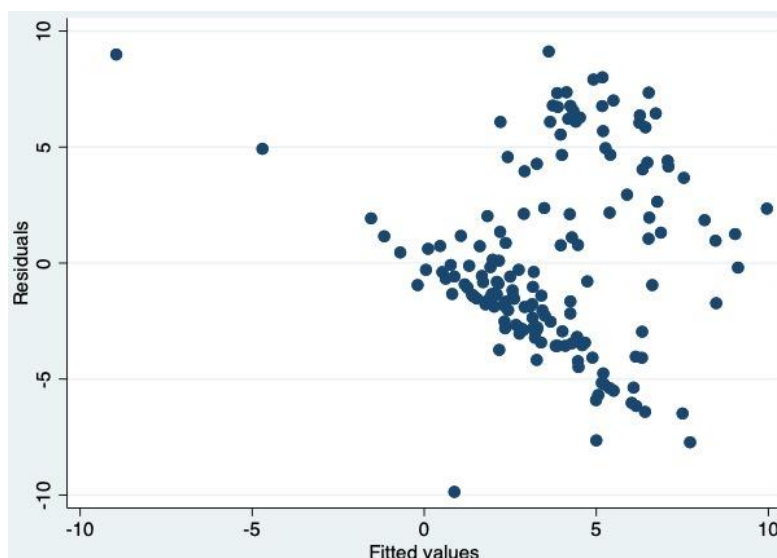


Figure 8: Residuals vs. Fitted values plot

6.3.3 Robustness Check

For completeness we have decided also in this case to use the robust command of Stata, to perform a robust regression of the model and highlight its goodness or not. The robust regression of Model 3 was performed without any change of variable with respect to the previously presented model. The robust regression results are shown in Table 22.

Variable	β	t	p-value
<i>ser_investors</i>	0,0335	2,53	0,013**
<i>d_patent</i>	2,8153	3,51	0,009***
<i>d_education_abroad</i>	-0,3839	-0,45	0,651
<i>d_experience_abroad</i>	-0,4700	-0,58	0,566
<i>d_pink_quota</i>	-0,0733	-0,08	0,933
<i>d_heterogeneous_education</i>	0,3413	0,45	0,655
<i>d_heterogeneous_experience</i>	0,4601	0,66	0,512
<i>n_founders</i>	-0,8061	-0,26	0,797
<i>company_age</i>	-0,4023	-2,41	0,017**
<i>ln_income</i>	3,4689	1,72	0,088*
<i>avg_years_entrepreneurial_exp</i>	-0,6280	-1,32	0,189
<i>constant</i>	-31,9298	-1,55	0,124
R-squared	0,2807	p-value	0,000
		F test	5,37

Table 22: Model 3 robustness check

As you can see, the R-squared of the regression is 0.2807. Analysing the results obtained, we can affirm that the statistically significant variables in Model 3 do not undergo any kind of variation within this model, moreover the values of the coefficients remain almost unchanged. Consistently, it must be emphasized that the number of serial investors participating in the campaign remains significant in this case as well, which reinforces the acceptance of the hypothesis H3.

7 Conclusions, Limitations and Further Developments

Equity Crowdfunding is gaining popularity and attracting a great deal of attention in the media and among policy makers. Although its diffusion may still grow and is not yet comparable, in terms of frequency of use by companies, to other financing instruments, it is likely that thanks to this capital raising mechanism, various innovative initiatives will be increasingly financed, thus being able to gradually improve the level of innovation, employment and, ultimately, the entire economic growth.

Among the dozens of campaigns that are carried out in Italy every year, we find companies of all kinds, belonging to sectors that are also very different from each other, but united by a common need. Due to these differences, it is not easy to analyse the success factors that a company can exploit to obtain the required capital. Human capital, which in this case is often represented by the founding team or the entrepreneurial team (or by a single entrepreneur), has been identified in the literature as one of the crucial factors in attracting and convincing investors to believe in a project rather than in another one.

Our research aimed to expand the literature on human capital as a success factor in Equity Crowdfunding. In particular, we have noticed that most of the published research considers the relationship between human capital and the success of an Equity Crowdfunding campaign, without going further.

However, if we consider the characteristics of the ECF and the investors participating in it, we note that it is necessary to continue with the analyses, also taking into consideration the continuation of the business after the success of the campaign. The ECF, in fact, represents an equity financing instrument that in many cases offers investors voting shares, thus creating a link between the investor and the company, which continues beyond the expiry of the campaign. Similarly, but on the other side of the coin, the investors who can use this tool are a heterogeneous group, ranging from professionals in the sector to individuals without any kind of expertise. Because of these reasons, we decided to structure our research starting from what was already available in the literature, but focusing our attention on the growth of the companies affected by this phenomenon, once funding was obtained. In particular, we considered human capital as a factor first

for success and then for growth, in order to find any common characteristics that are not only crucial to obtaining capital, but to use it subsequently in the best way. All this was integrated with another analysis on growth focused on investors, to understand in this case too how much their specific weight is once the campaign is concluded.

Our research was based on econometric analyses, carried out on a sample of 244 Italian Equity Crowdfunding campaigns between 2014 and 2018. Although the databases available to us contained data relating to campaigns up to the year 2020, the need to study company growth forced us to discard the campaigns relating to the years 2019 and 2020, as at the time of data collection, the financial statements of the year 2020 were not available yet, so it was impossible to study the growth of the participating companies at the ECF from 2019 onwards. Our survey focused on some characteristics of human capital that could be a good proxy of its quality and related skills acquired. In this sense, some studies, such as that of Piva and Rossi-Lamastra (2019) or Colombo and Grilli (2010), have been really useful as they have created a guideline to follow, then applying the same principle to post-company growth as well. countryside.

As independent variables, we considered several characteristics of the entrepreneurial team, in particular: (i) percentage of business graduates, (ii) percentage of graduates in the business sector, (iii) percentage of communication graduates, (iv) average of years of entrepreneurial experience. Each of these variables investigates the presence of different skills within the managerial or foundation team of the companies participating in the Equity Crowdfunding campaigns and aims to verify the impact of these skills on the success of the Equity Crowdfunding campaigns, represented by the variables employees: (i) campaign success and (ii) revenue growth (used in terms of difference of log). Furthermore, we considered as control variables the most common ones in the existing literature, both on entrepreneurship and on other influencing factors, for the evaluation of the specific signals of the company: (i) education abroad, (ii) work experience 'abroad, (iii) heterogeneous education within the team, (iv) heterogeneous work experience within the team, (v) presence of at least one woman among the founders, (vi) documents provided, (vii) number of founders, (viii) ownership of patents by the company, (ix) target of the campaign, (x) age of the company and (xi) income of the province of belonging.

We initially re-proposed the study on the relationship between human capital and campaign success, using a Probit model that gave us good results, as the p-values

confirmed the partial acceptance of the hypothesis 1a (the percentage of business degree influences the success of the campaigns, but not the other degrees considered) and the acceptance of the hypothesis 1b, that is the positive correlation between the entrepreneurial experience of the team and the success of the campaigns.

Subsequently we wanted to provide our contribution by enriching this discourse with a further nuance relating to this hypothesis, analysing a possible moderation effect of the company age on the human capital variables. In fact, the companies participating in ECF campaigns range from newly founded start-ups to innovative SMEs with several years of activity behind them. It is therefore not to be excluded that in a company that has been operating for some time, the human capital variables have less weight, as their signalling effect with regard to the quality of the team is precisely moderated by the company age. In this sense, we added additional variables to the previously used model that could study this effect on the variables already found to be significant. In this case, however, the p-values obtained with the new model did not express any kind of significance, so we could not accept or reject the hypothesis 1c.

The second hypothesis formulated has sanctioned the detachment of our research work from previous studies, directing the analyses towards the study of post-campaign business growth, the gap we had set out to fill. In this case, the model used was a 2SLS regression, with variables almost identical to the previous model. It was also assessed whether the success of the campaign plays a significant role in subsequent performance. To do this, the endogeneity of the variable used was taken into account, which is why it was necessary to use this type of model by introducing an instrumental variable. The results obtained showed a single significant p-value among the independent variables, that is the one relating to the percentage of members with a degree in business, so also in this case we can partially accept the hypothesis 2.

To conclude our report, we analysed other possible factors influencing the growth of post company performance, investigating the role of investors, real co-stars of this ecosystem. In this case, we used an OLS regression, decreasing the analysis sample from 244 campaigns to 160, as we only had to consider the successful ones. In this model, the only important change from a variable point of view is the inclusion of a new independent variable used to test the influence of serial investors on post-raising corporate performance. Unlike many casual investors who approach the world of crowdfunding without specific skills, this type of investor, represented in most cases by business angels

or venture capitalists, has the ability to identify a level business and make it grow exponentially. We therefore wanted to investigate whether even within a recently spread ecosystem such as the ECF, they had a very important specific weight. From the p-value obtained within the model, we can see that there is a close positive correlation between the number of serial investors participating in a campaign and the subsequent growth of the business. We can therefore accept the conclusive hypothesis 3.

Hypothesis	Statement	Validation
1A	<i>Entrepreneurial teams with a higher percentage of members with useful degrees are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with fewer useful degrees.</i>	Partially confirmed
1B	<i>Entrepreneurial teams with more members with entrepreneurial experience are more likely to be successful in Equity Crowdfunding than entrepreneurial teams with less members with entrepreneurial experience.</i>	Confirmed
1C	<i>Company age has a moderating effect on the correlation between human capital variables and the success of an Equity Crowdfunding campaign.</i>	Not confirmed
2	<i>The quality of human capital of the company s has a direct positive effect on the growth of innovative start-ups after an Equity Crowdfunding campaign.</i>	Partially confirmed
3	<i>The number of professional investors is positively correlated with the post-campaign financial performances of the company.</i>	Confirmed

Table 23: Results of this research

Each model used in our analyses has been subjected to a robust regression, to test its quality and to support the stance towards the hypotheses formulated. From these analyses, no noteworthy changes emerged with respect to the starting models, so we can confirm what was said previously. We would also like to underline that for each model used, the correlation matrices of the variables and the VIFs were analysed, which have always respected the canonical limits, thus confirming that the models we created are solid.

Even if this thesis was able to confirm two of the starting hypotheses (H1b and H3) and found interesting ideas for the partially accepted ones (H1a and H2), there are obviously limits that are now worth underlining. In particular, the limitations are mainly related to the sample used.

The total number of campaigns considered is in line with some previous studies, but an extension could be considered in order to carry out a more complete search. In any case, this result is somehow a physiological consequence of the data needed for this research, as the information on human capital must be very precise and complete to allow a correct analysis, and not much can be done about this. In any case, it would be useful to enlarge

the sample, working on the temporal and geographical dimension. In fact, the campaigns included in the sample were carried out between 2014 and 2018, while the most recent ones were excluded; therefore, potential progress would be to include more recent campaigns in the future. Regarding the geographical dimension, this thesis includes only campaigns carried out in Italy. A possible improvement could be the use of a European sample in order to represent a larger market and identify possible differences; moreover, in order to obtain more robust results, the possibility of integrating extra-European markets of great importance, such as the United States, must not be excluded.

Regarding the variables related to human capital, the fact that some of the information used derives from the LinkedIn profile of the founders can be a source of inaccuracies. Being a real social network, the profile is managed by the person concerned, who in some cases could place great emphasis on the successes obtained, on the other hand it may not include all the work experiences of his career, thus creating inaccuracies in the data collected. Therefore, a considerable improvement could be to include considerations on the reputation of previous study and work experiences. Finally, several cases could be evaluated for comparison purposes, as the founding teams of the companies considered varied in number, so a more standard unit of measurement could be considered to further refine the analysis.

7.1 Future possible applications

Our research provides many foods for thought, which could also interest professionals in the world of Equity Crowdfunding.

From an entrepreneur's point of view, this thesis underlines the importance of creating teams with the right skills, both theoretical and practical, especially in the managerial field. These are not only useful for start-ups, but also for SMEs that are interested in ECF at a more mature stage of their life cycle. The managerial skills that help increase the probability of success of the campaigns are the same ones that increase the growth rate of subsequent performances, so their importance is double. Thinking back to our data collection process, we can recall dozens of business plans and pitches of crowdfunding projects in which the entrepreneurial team was defined for the tasks performed in the company, without however providing suitable documentation to demonstrate their actual skills. The same reasoning can be applied to the Italian ECF platforms, which in some cases do not attach the CVs of the founders, making the evaluation process by investors slower and therefore less attractive than others.

Speaking instead of investors, we know how they feel safer when they approach initiatives supported by professional investors, knowing that the campaign has a good chance of success. Thanks to our contribution we have shown how the contribution of professional investors is not limited to the success of the campaign, but continues to influence growth.

Finally, regulators could consider what has just been said trying to divulge more information on both companies and investors, in order to stimulate the whole process and attract more and more people within this ecosystem.

Here something ends. Our paper, our university path. But we hope that in the same way something new begins, first of all the interest in you towards this fascinating world.

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