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Innovative Startup and Crowdfunding: A New Paradigm for Entrepreneurial Financing

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Italian abstract

Il crowdfunding rappresenta una forma innovativa di finanziamento che sta emergendo come alternativa valida alle tradizionali modalità di raccolta fondi, in particolare per le startup e le piccole e medie imprese (PMI). In questo contesto, il green crowdfunding si distingue per il suo potenziale nel finanziare progetti legati alla sostenibilità e all'innovazione verde. Questa tesi esplora il fenomeno del crowdfunding, con particolare attenzione al suo utilizzo per il finanziamento di iniziative verdi e sostenibili, analizzando le caratteristiche delle piattaforme di crowdfunding, le opportunità offerte agli investitori, e le sfide legate alla regolamentazione, alla fiducia degli investitori e alla sostenibilità a lungo termine. Il lavoro offre anche una panoramica del mercato italiano, con esempi di piattaforme che supportano progetti green, come Ener2Crowd. Vengono, inoltre, esplorati gli impatti sociali e ambientali di questi investimenti e le dinamiche che influenzano il successo delle campagne di crowdfunding. Infine, la tesi fornisce una riflessione sugli sviluppi futuri del green crowdfunding, considerando i limiti e le potenzialità di questo strumento in un contesto economico e normativo in continua evoluzione.

English abstract

Crowdfunding represents an innovative form of financing that is emerging as a valid alternative to traditional funding methods, particularly for startups and small and medium enterprises (SMEs). Within this context, green crowdfunding stands out for its potential in financing projects related to sustainability and green innovation. This thesis explores the crowdfunding phenomenon, focusing on its use for funding green and sustainable initiatives, analyzing the features of crowdfunding platforms, the opportunities offered to investors, and the challenges related to regulation, investor confidence, and long-term sustainability. The work also provides an overview of the Italian market, with examples of platforms supporting green projects, such as Ener2Crowd. Furthermore, the thesis explores the social and environmental impacts of these investments and the dynamics influencing the success of crowdfunding campaigns. Finally, the thesis reflects on the future developments of green crowdfunding, considering the limitations and potential of this tool in an ever-evolving economic and regulatory context.

INTRODUCTION

In recent years, crowdfunding has emerged as a transformative tool for funding innovation, particularly in the realms of green projects and sustainable ventures. As global challenges, such as climate change, energy depletion, and resource conservation, take center stage, innovative solutions that prioritize sustainability are becoming crucial. Crowdfunding, particularly green crowdfunding, offers a unique opportunity for businesses and entrepreneurs to secure the capital necessary to drive impactful projects, while simultaneously enabling individuals to invest in projects that align with their values.

This thesis aims to explore the evolution, challenges, and potential of crowdfunding, with a specific focus on green crowdfunding platforms like Ener2Crowd. These platforms have carved a niche in providing financial support for green projects, including renewable energy, energy efficiency, and sustainable development initiatives. The research will analyze the role of crowdfunding in democratizing access to capital, its effectiveness in supporting green innovations, and the associated risks and opportunities for investors and entrepreneurs alike.

Crowdfunding has proven itself as an effective mechanism for early-stage financing, but its role in supporting long-term, capital-intensive projects, especially in the green sector, requires deeper investigation. Through examining key issues such as regulatory uncertainty, investor confidence, and scalability challenges, this thesis will provide a comprehensive understanding of crowdfunding's impact on the green innovation ecosystem. Moreover, it will consider the regulatory landscape in Italy and the European Union, discussing the implications of current policies on the growth and success of green crowdfunding initiatives.

By reviewing relevant case studies, including those from platforms like Ener2Crowd, this thesis will identify best practices, measure the success of specific campaigns, and propose strategies for overcoming common barriers in the crowdfunding space. Ultimately, it will offer insights into the future of crowdfunding as a vital tool for financing the green transition, emphasizing the potential for such platforms to support sustainable growth while mitigating environmental challenges.

Through this exploration, the thesis contributes to the academic discussion on crowdfunding as a financing model for sustainability and offers practical guidance for entrepreneurs, investors, and policymakers looking to harness its potential for creating a greener, more sustainable future.

Chapter 1 – STARTUP AND THE INNOVATIVE STARTUP

1.1 Definition and concept of a startup

In this chapter we want to analyze, in general terms, the business of startups. Starting from a definition of “startup”, we will delve into its life cycle, its financing methods, its phases, concluding with the actors involved in the process.

The term “startup” is frequently used in the entrepreneurial, academic and politic, but also television and radio fields. The digital medias are packed with headlines dedicated to the phenomenon of startup. The English verb “start-up” means to launch, more specifically “to start-upa business” means to launch a new entrepreneurial activity. Instead, the noun startup refers a to a certain type of newly established firms, although not every newly established company can be considered to be a startup.

However, it does not exist a unique and univocal accepted definition. Analyzing the literature, it emerges that there are two main tendencies that explain this term.

The first direction suggests that a startup is any entrepreneurial activity during its early stage. In this case, the temporal characteristic is the focus, without emphasizing the growth, technological, innovative or ascending capabilities of a business. The term “startup” can be translated as “launch or beginning” and it suggests the initial phase of a firm’ business.[1] At the beginning, this term was only referred to the initial phase of a new enterprise, born within the Internet or the technological sectors. Progressively the term started to be wrongfully associated to greenhorn in the Stock Market.

The second direction, instead, describes a stratup as “entrepreneurial ideas that can be translated in business models with a substantial growth rate, usually deeply innovative and operating in scientific or high-tech fields.” [2]The focus is the capability to innovate, a distinctive characteristic of a

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[1] http://www.treccani.it.

[2] Brusa L., Business Plan. *Guida per imprese sane, start-up e aziende in crisi*, Egea, Milano, 2016, p.160.

business startup. *The Startup Owners* book written by Steve Blank sustains that "The startup are not small versions of big and already established companies. A startup is a temporary organization searching for a repeatable, ascending and profitable business model."[3] The adjective "repeteable" is linked to the startup's capability to frequently carry out a series of operations to offer, every single time, the same outcomes. An example could be the recurring achievement of revenue as a result of a product or service delivery that consists in the core business of a startup. The adjective "ascending" refers to a firm's potential to create a substantial and quicker profit's growth than elementary costs growth. Finally, "profiteable" takes into account the definition itself, concerning the necessity of making profits. [4] To be more precise, the adjective "profiteable" related to certain startup doesn't necessarily involves their capacity to raise money, but especially for the startup operating in digital environments, it means "crowded". An example could be the social media platform Facebook which is worth millions of dollars, not for its direct activity, but for selling to companies informations concerning the behavior and preferences of its users.

Talking about an "innovative startup", a point of agreement can be found between the two directions, previously illustrated. An "innovative startup" can be defined as a new firm gathering all the characteristics that allow it to be a key player in the technological progress. Therefore, we can describe a startup as an innovative, newly established and growth-oriented firm, searching for an ascending and sustainable[5] business model and operating in extreme conditions of uncertainty.[6]

In conclusion, what emerges from the previous analysis is that the concept of startup is variable and subjective, nevertheless some constant

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[3] S.Blank, B.Dorf, *Startupper. Guida alla creazione di imprese innovative*. Egea 2013, Milano p. 23.

[4] http://www.unishare.it/universi/2015/04/fenomenologia-di-una-startup/.

[5] Dee N., Gill D., Weinberg C., McTavish S., *What's the difference? Startup Support Programmes*, Nesta, Londra, 2015, p.8. https://media.nesta.org.uk/documents/whats_the_diff_wv.pdf.

[6] Ries E., Lean startup. *How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*, Crown Business, New York, 2011, p.27.

characteristics can be highlighted. A stratup is any newly established or already existing firm that:

- Is aimed at the realization of a product or service with a highly innovative connotation;
- Has a profiteable, repeatable and ascending business model;
- Is in the search for a market to satisfy in order to attain a rapid a sustainable growth;
- Has to go through periods of high uncertainty, high levels of competitions and a limited lifespan.

1.1.1 The characteristics of a startup

In order to be more precise with a definition, it is possible to analyze the most relevant characteristics of a business startup.

Newly established firm: a startup is usually identified as a business during the first years of its activity. The temporal parameter is a constant in every single policy created to support and finance a startup. According to the principal European policies, a business is considered to be a startup within 5-10 years from its creation.[7]

Startup as an innovation: if we want to discuss about an innovation startup, we have to define beforehand what "innovation" means. Even if multiple definitions of innovation exist in the literature, "innovation" could be explained as "…the creation and implementation of new processes, products, services or commercialization methods to improve results, efficiency, efficacy and quality".[8] The process of innovation involves not only the

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[7] The Italian normative (DL. 179/2012) identifies the limit of 5 years. In France the "Jenner Entreprise Innovative (JEI), to be defined as a startup must not exceed 8 years from its creation. In Germany, the BVDS (Bundesverband Deutcher Strat Ups) set the parameter of 10 years as the limit for an innovative startup.

[8] Mulgary, G. and Albury, D. *Innovation in the Public Sector*, Cabinet Office, London, 2003, p. 3.

product, but also the productive process and the organizative aspects and it has to turn into tangible results to improve the precedent context. Moreover it is necessary to point out a distinction between the incremental and the radical innovation. The incremental innovation represents an adaptation or improvement or preexisting solutions, while the radical innovation turns into the production and commercialization of a product or service able to shift the completion of already established companies in certain sectors by creating new and unexplored market areas.

Startup as a firm with a high potential for growth: Steve Blank, famous entrepreneur of the Silicon Valley, expert and disseminator in the field of newborn innovative enterprises, sustains that a startup is not created to remain alike, but it must seek to become a much bigger firm by building a scalable business model. [9] It is exactly the prospective of high growth-rates that allows found-raising processes, necessary to collect capital for the innovative startups. Without the above-mentioned prerequisites it is impossible for financiers such as Business Angels, Venture Capitalists etc. to support the risk linked to SMEs.

Startup as a firm in the search for an ideal organizational model: being a newly establishes company operating in innovative contexts, a startup should commit time and resources to find its optimal asset. First of all, itis essential to understand how to exploit a certain innovation to obtain the maximal value. Secondly it has to build a scalable and replicable business model. [10] The term "scalability" stands for the capability of a certain business model to grow and augment rapidly its dimensions. On the other hand, the term "replicability" highlights the recreation of a certain business model in different contexts, without causing substantial changes. [11] In general, startups are characterized by a high level of flexibility and dynamism, by a

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http://www.sba.oakland.edu/FACULTY/MATHIESON/MIS524/RESOURCES/READINGS/INNOVATION/INNOVATION_IN_THE_PUBLIC_SECTOR.PDF.

[9] Blank S., *What's A Startup? First Principles*, personal blog, January 25th, 2010. https://steveblank.com/2010/01/25/whats-a-startup-first-principles/.

[10] Blank S., *What's A Startup? First Principles*, personal blog, January 25th, 2010. https://steveblank.com/2010/01/25/whats-a-startup-first-principles/.

[11] https://creazioneimpresa.net/2019/07/09/scalabilita-replicabilita-le-prerogative-startup/.

flat organizational asset composed of few hierarchical levels and by a single management level guided by the founder-administrator. [12] Startups usually operate in relatively small market niches and often the internal market itself is not suffficient to sustain the business. It is, indeed, the so called "nanism" of the internal market to represent one of the reasons why startups need to start processes of internationalization or to be globally present since the moment of their creation. [13] Moreover, attractive public policies, exploitment of both tangible resources, such as raw materials or qualifies manpower, and intaglible resources, such as the sharing of knowledge, are other aspects that could influence the willingness of a startup to undertake processes of internationalization.[14].

Startup as a firm with high levels of uncertainty: one of the main distinctive aspect of a startup is its riskiness. [15] The uncertainty that characterizes a startup is both internal and external. Specifically, the internal uncertainty concerns the entrepreneurial tradition and the limited experience that are frequently translated into a low level of "routinization" of organizational internal processes. On the other hand, the external uncertainty describes both the complex and dynamic markets in which a startup could operate and the lack of knowledge and trust of clients, suppliers, public institutions and financiers. [16]

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[12] Zaech S., Baldegger U., *Leadership in start-ups*, International Small Business Journal, 2017, p. 160. https://www.researchgate.net/publication/313484533_Leadership_in_start-ups.

[13] Rasmussen E.S., Tanev S., *The Emergence of the Lean Global Startups a New Type of Firm*, Technology Innovation Management Review, 2015, p.13. https://timreview.ca/sites/default/files/article_PDF/RasmussenTanev_TIMReview_November2015.pdf.

[14] Symeonidou N., Bruneel J., Autio E., *Commercialization strategy and internationalization outcomes in technology-based new ventures*, Journal of Business Venturing, 32, 2017, p.304-305. https://www.sciencedirect.com/science/article/pii/S088390261730109X?casa_token=W51G_iwnT6oAAAAA:1jXfS5KpgJhAYLUidU4cX8Ptk93ioq6Xjnn0A44gR097IEj_YWoZvbmSshUU9361NPE7rF7j.

[15] Ouimet P., Zarutskie R., *Who works for startups? The relation between firm age, employee age, and growth*, Journal of Financial Economics, 112(3), 2014, p. 387. https://www.sciencedirect.com/science/article/pii/S0304405X14000452?casa_token=M9L6Cw1zH-MAAAAA:S_QShdO1nxdsgtARqrIy3HkbGcKEAKa5g04xsTH8bq-tssJ53RVK9ovAFDNfy1J_tpmZlnoA.

[16] Grant R. M., *Contemporary strategy analysis*, Wiley, Chichester, 2016, p. 254.

1.1.2 *The innovative startup regulated by the Italian Law*

The decree 18th October 2012 has introduced in the normative Italian field the concept of "innovative startup". [17] The innovative startup could be defined as a limited company, established even in cooperative form regulated by the Italian law. The relevant legislation also specifies a series of parameters to be taken into account to identify innovative startups:

- The firm should be established and operating for no longer than 60 months;

- It should be residing in Italy [18], or in one of the Member States of the European Union or in one of the States that partecipate in the Agreement of the European economic space, but it has to have the productive branch or any branch in Italy;

- The total amount of the annual production, starting from the second year of the startup's activity, should not be higher than 5 million euros;

- It should not have allocate profit;

- The main or exclusive social goal should be the development, the production and the commercialization of innovative products or services with a high technological value;

- The startup should not be born as a result of a merger, a corporate division or transfer;

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[17] The Italian legislator introduced the concept of "innovative startup" with the Legislative Decree 18th October 2012, n. 179. "Further urgent measures for the country's growth.", of the Monti Government, section IX art. 25-32. The subsequent interventions that have strengthened the overall system are the decree-law June 28th 2013, n. 76, the legislative decree of January 24th 2025, n.3, the law of December 11th 2016, n.232, law December 30th 2018, n. 145, and finally the legislative decree of July 5th 2019, n. 156.

[18] Pursuant to art. n. 73 of the Decree of the President of the Republic 22nd December 1986, n. 917, "*Single text on income tax*".

- The innovative aspect of a startup is identified with its possession of at least one among these parameters;

    1. A share equal to 15% of the higher value between the turnover and the annual costs attributed to activity of research and development;

    2. The manpower should be composed of at least one third of PhD students, researchers or graduate research students, otherwise of at least two third of business partners or collaborators in possession of a master degree;

    3. The firm is the owner, depositary or licensee of a registered patent or the owner of a program for original registered data processor.

The law also refers to the the "innovative startups with a social connotation" that are the startups operating in certain sectors [19] Socially oriented, providing them with additional fiscal benefits.

In order to develop an ecosystem based on innovation, a special section of "*Registro delle Imprese*"[20] was created. Startups can enroll online on this website, in free and voluntary way, using an auto certification that assess their prerequisites.[21] On the website of the "Registro delle Imprese", moreover, a showcase is presented to outline the characteristics of a startup

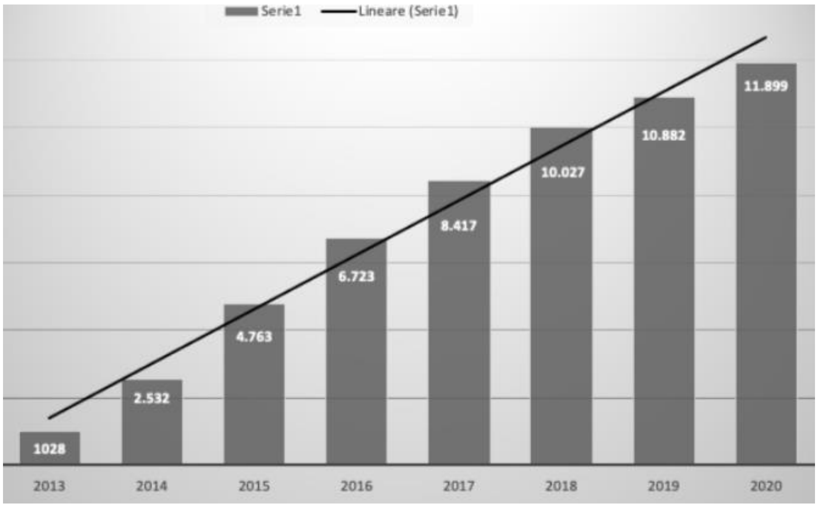
[19] Legislative Decree 3rd July 2017, n.112 "*Revisione della disciplina in materia di impresa sociale*", art.2 comma 1. https://www.gazzettaufficiale.it/eli/id/2017/07/19/17G00124/sg.

[20] Legislative Decree 18th October 2012, n. 179, "*Ulteriori misure urgenti per la crescita del Paese*", art.25, comma 8. https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2012-12-18&atto.codiceRedazionale=12A13277.

[21] Legislative Decree 18th October 2012, n.179, "*Ulteriori misure urgenti per la crescita del Paese.*", art.25, comma 9. https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2012-12-18&atto.codiceRedazionale=12A13277.

in order to make it more visible and appealing for all the possible interested stakeholder.[22]

Figure 1.1: innovative startup: trends of growth



Source: Mise

Operational support and benefits and incentives for each firm are granted for those willing to invest in certain startup. Concerning the operational point of view, the law permits, for example, the exoneration from chamber rights and stamp duties, the extension up to 12 months of the *"rinvio a nuovo"* period of losses and, finally, a specific work related discipline. Regarding the investors, it is expected a 40% IRPEF deduction for juridical subject investing in equity of innovative startup. Such percentage is possible to be extended up to 50% in the case of the purchase of the overall nominal capital of the corporation.

The legislative Decree n.14, 12th January 2019, implementational of the Law n.155/2017, and published in "*Gazzetta Ufficiale*" on the 14th February 2019, has introduced in the legislative system the "*Nuovo Codice della Crisi d'impresa e dell'insolvenza*" in which it is included the totality of alert procedures aimed at bringing forward situations of business crisis. The "*Sistema di Allerta*" has to be composed of a series of useful indicators to

[22] http://startup.registroimprese.it/isin/home.

detect gaps of earnings, assets, holdings and finances.[23] However, the norm does not exactly specify which are the indicators to be deployed, but the article 13 identifies the "*Consiglio Nazionale dei Dottori Commercialisti e degli Esperto Comtabili (CNDCEC)*" as the authority responsible for the elaboration of such parameters. [24] At the same time the article n.13 commits to the CNDCEC the elaboration of specific parameters for innovative startup. The CNDCEC recognizes the innovative startup as specific and more inclined to unsuccessful results.[25] Recurring negative economic results are considered to be "natural" for newly established innovative businesses. Therefore, it is possible to affirm that considering the mas alert signal is inadequate and inaccurate.

[23] Legislative Decree 12 January 2019, n.14, "*Codice della crisi dell'impresa e dell'insolvenza*", art.13. It debates the indicators useful to detect a crisis.

[24] The second comma la art. n. 13 of the "*Codice della Crisi dell'impresa e dell'Insolvenza*" refers to the CNDCEC related to the innovative startup.

[25] Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili, *Crisi d'Impresa, gli indici d'allerta*, 2019, p. 24-25.
https://commercialisti.it/documents/20182/1236821/codice+crisi_definizioni+indici+%28ott+2019%29.pdf/2072f95c-22a2-41e1-bd2f-7e7c7153ed84.

1.2 The different types of startup

Startup are frequently classifies in various categories by following a seiries of parameters or indicators. On the basis of the products or services' idea, startup could be evaluated as visionary, innovative and ordinary. On the other hand, based on the market or segment that they satisfy, startup could be classified as MedTech, FinTech, FoodTech, tourism startup, fashion startup or digital startup.

However, the most "ufficial" classification is, once again, given by Steve Blank. In an article pushed on his blog, the entrepreneur of the Silicon Valley explains that every startup has unique features, but six main types could be identified[26]:

- Lifestyle (Lifestyle startup: Work to Live their Passions);
- Small Business startup: Work to Feed the Family;
- Scalable startup: Born to Be Big;
- Purchasable (Buyable Startup: Born to Flip);
- Social startup: Driven to Make a Difference;
- Large startup companies: Innovate or Evaporate.

When talking about the *lifestyle startup*, the entrepreneurs are described as surfers or divers because they transform their passions into jobs, living the life they love, working just to fulfill personal satisfaction. Examples in this field could be the professional programmer or the web designer.

The second category illustrated is the one of the *small startup businesses*. Nowadays they represent the majority of the startup present on the market.

[26] https://steveblank.com/2011/09/01/why-governments-don't-get-startups/.

The entrepreneur manage directly the activity, investing his personal capital or the capital borrowed from relatives, friends or banks. Usually the manpower itself is represented by these people. Unfortunately these types of startup are rarely profitable, but, according to Blank, they represent accurately the concept of entrepreurial attitude characterized by passion the dedication in creating local job roles.

Blank then delves into the *scalable startup*, born to be big and dreamt to be achieved by every entrepreneur and their investors. Examples could be businesses such as Google, Twitter, Skype or Facebook. Their founders strongly believe in the vision, able to change the current preexisting situation. This is the principal difference between entrepreneurs of SMEs and big firms: their interests reside in creating a corporation that could be listed in the stock market by generating millions of dollars. Finally, scalable startup require nominl capital and attract investments from visionary investors.

Blank also analyses the category of *purchasable startup*. More precisely, in the last few years web and application startup have been created to be sold to bigger companies. Their objective, therefore, is not to create a business of millions of dollars, but is to be sold. A possible example could be WhatsApp acquired by Facebook at a cost of 19 billions of dollars.

A remarkable attention is drawn by the *social startup*. They are guided by passionate and visionary entrepreneurs as well, although their objective is to improve the current situation and not to create an enormous amount of profits. The could be profit, non-profit or a mixture of both types. In Italy, Article 25, paragraph 4 of Legislative Decree No. 179/2012 allows an innovative startup to obtain, upon request, the designation of a socially-oriented innovative startup, provided it meets the requirements for an innovative startup and operates in sectors identified by national legislation on social enterprises, considered to have particular social value. These sectors include: social assistance, healthcare, education, training, environmental protection, cultural heritage enhancement, social tourism, university and post-university education, provision of cultural services, extracurricular education aimed at preventing school dropout and promoting academic success, and services for social enterprises provided by entities consisting of more than 70% organizations that operate as social enterprises.

Due to their unique feature of combining a business logic with goals related to community well-being, *socially-oriented innovative startups (SIAVS)* sometimes show a return on investment. These startups, being highly beneficial to the community, not only enjoy the same benefits as innovative startups but also receive increased tax incentives. However, recent documents indicate that granting this status no longer provides additional legal benefits compared to those available to other innovative startups, except for any specific regional or local measures. Unlike other types of innovative startups, such as those in the energy sector identified by an ATECO code, identifying SIAVS required a more flexible recognition procedure. It is not possible to assess the social impact of a startup based solely on its ATECO code, and some SIAVS that use technological innovations also pursue social objectives. The *Social Impact Document* has been chosen by the legislator as the means to identify SIAVS, aiming to demonstrate, through as objective a measurement as possible, the social impact produced by the SIAVS. The SIAVS is required to prepare and electronically submit this social impact description document to the Chamber of Commerce, along with a self-certification confirming the startup meets the necessary criteria to qualify for SIAVS status, or the status will be revoked.

Lastly, in the article written by Blaank, the characteristics of *large startup companies* are explained. Big companies have limited lifecycles, further restricted in recent years. The majority exploits their capability of creating variations or modification of already existing products (support innovation), focusing on the executing and the improvement of preexisting business model, no longer sufficient. In order to survive in an economic context, big startup have to focus on an innovative approach leading to new business models by implementing new organizational methods and new competencies (disruptive innovation[27]). This is achievable by pursuing two directions. The first one is to purchase innovative already existing companies (purchasable startup), while the second one is trying to build internally a disruptive product. However, the second direction results to be hard to achieve due to the large dimensions and the embedded company culture.

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[27] S. Blank, B Dolf, *Startupper: Guida alla creazione d'imprese innovative*, Egea 2013, Milano, p. 27.

1.3 Some measures for preferential treatment

The se kind of measures could be applied to innovative startup starting from the date of their enrollment into the special section for a maximum of five years since their creation. Moreover, the legislative norm 19th May 2019, n.34 introduced measures to strengthen and sustain the eco-system of innovative startup:

- *Free and digital founding method:* starting from July 20th 2016, it is possible to fund an innovative startup through a free procedure based on the utilization of a digital signature that could be also utilized, since June 22nd 2017, for following changes.

- *Incentives for investments in capital:* since Juneau 1st 2017, it is available for investors, assigning their nominal capital to innovative startup, a tax break. That is, for natural people a fiscal deduction from the gross IRPEF tax equal to 30% of the amount invested, up to a maximum of one million euros. While concerning legal entities, a deduction from the IRES taxable amount equal to 30% of the amount invested, up to a maximum of 1.8 million euros;

- *Access to the guarantee fund for SMEs*: innovative startup benefit from a simplified, free and direct intervention of the Guarantee Fund for SMEs, that is a public capital fund facilitating the access to credit through the granting of guarantees on bank loans. The guarantee covers up to 80% of the credit provided by the bank to innovative startup and certified incubators, up to a maximum of 2.5 million euros;

- *Smart&Start Italia*: it is the most relevant subsidized inancing program dedicated to innovative startup. It provides a zero-interest financing for entrepreneurial development projects. It cover up to 80% of eligible expenses of an inclusive amount between 100 thousand and 1.5 million euros.

- *ICE Agency services:* the ICE Agency provides normative, corporate, fiscal, real estate, contractual and credit assistance. The innovative startup have to right to obtain a discount equal to 30% for the purchase of resources and services;

- *Transformation to innovative SME*: in case of success, the mature innnovative startup, characterized by a significant innovative component, could transform into innovative SME. They are directly transferred to the special section of the "*Registro delle Imprese*" dedicated to innovative SME. The continue to be enrolled in the special section so that they do not lose the right to obtain the benefits available;

- *Exemption from chamber fees and stamp duty*: the innovative startup are exonerated from the payment of duty stamp and the chamber fees due to the obligations related to the registration to the "*Registro delle Imprese*", as well as from the annual payment to the chamber of commerce;

- *Raising capital through equity crowdfunding campaigns*: since 2013 this type of capital raising based on the contribution of a multitude of small and medium in bestirs has been totally regulated by the Italian government. The control was given to the "*CONSOB*";

- *Exception to ordinary corporate regulations*: particular rights are granted to innovative startup. These concerns, for example, the ability to offer shares of capital to the public and carrying out operations based on their shares;

- *Flexible working discipline*: the innovative startup could hire staff with fixed-duration contracts lasting no longer than 24 months. However, during this period of time, the contracts could also have a shorter duration by being renewed several times;

- *Remuneration through capital participation instruments*: a form of alternative remuneration for the manpower or suppliers of this kind of innovative businesses consists in granting capital share which could replace both in part or in total the monetary remuneration;

- *Simple VAT management*: it is not foreseen for innovative startup to affix the approval for the compensation of VAT credits, up to a a,ximum of 50 thousand euros;

- *Deadline extension for the losses' coverages*: in the case of operating losses resulting in reduction of the company capital, the deadline for the losses' drop, lower than one third, could be potato the subsequent financial year;

- *Exemption from the regulation for shell companies and systematic loss companies*: innovative startup are not subject to the regulation of shell companies and systematic loss companies;

- *Fast fail*: in the case of unsuccessful innovative startup, they can conclude their activities in a faster and less arduous way.

According to a survey carried out by *Mise,* the reduction costs for the registration to the "*Registro delle Imprese*" seems to be the preferred tool. 63% of startup declare to have used this mechanism. Moreover, *ad hoc* legislation on flexible corporate structure, incentives for investments and the guarantee fund for SMEs are among the most successful measures. Their utilization rate amounts to 25%, 19% and 18% respectively. However, the other tools previously mentioned are used by less than 15% of respondents.

1.4 Certified incubators

Certified incubators for innovative startups, as defined by Legislative Decree 179/2012, Article 25, Paragraph 5, are capital companies, including cooperatives, based in Italy in accordance with Article 73 of Presidential Decree 22 December 1986, No. 917. These incubators provide support for the creation and growth of innovative startups and must meet the following criteria:

- Have suitable spaces to host innovative startups, allowing the installation of equipment for testing, trials, research, and verification.
- Possess infrastructure tailored to the needs of startups, such as ultra-broadband internet access, meeting rooms, and specific machinery.
- Be managed or directed by individuals with recognized expertise in innovation and business, with access to permanent technical resources and managerial consultancy.
- Maintain regular collaboration with universities, research centers, and financial partners involved in projects related to innovative startups.
- Demonstrate proven experience in supporting innovative startups.

Certified incubators meeting these requirements are eligible for benefits such as:

- Simplified and free access to the guarantee fund for SMEs.
- Remuneration through equity participation instruments.
- Exemption from chamber duties and stamp duties.

According to *InfoCamere* data from 2021, there are 47 certified incubators in Italy, with Lombardy hosting the highest number, totaling eight.

1.5 The startup lifecycle

The innovative startup follows lifecycle composed of different stages such as: pre-seed stage, early stage, geothermal, expansion and exit. In every single of these moments, it is necessary to allocate financial resources in order to firstly sustain the entrepreneurial risk and the R&D investments, essential to create the structure of the business.

Hence, together with the lifecycle, another cycle takes place, namely the found raising process. It concerns the finding of financial resources, also named as the financing cycle.

In the following paragraph, the lifecycle of a startup will be illustrated by associating which is the best financial modality to sustain each phase of the business' development and growth.

It is essential to point out the fact that various classifications of a startup's lifecycle exist and even the single phases are often defined and identified in numerous ways.

1.5.1 Pre-seed stage

This phase concerns the creation of an idea, a valid product is still not present, the business model is not outlined and the business' structure is unknown. It represents the first step, the embryonic stage, the moment in which the team is created and the legal bases are founded by establishing an agreement with possible partners. The aim is to transform the idea in concreate, real and feasible products or services.

During the pre-seed stage, the risk is at its highest levels, the investments are limited and complicated to obtain. In countries like the U.S.A., it is already possible to obtain a little amount of capital invested usually by "Family, friends and fools". On the other hand, in Italy, or Europe in general, it is much harder to quickly obtain capital and the entrepreneur is frequently the first one to invest in his own idea. One of the possible form of financing menthol is to participate as an incubator which can intervene with little economical incentives.

1.5.2 *Early stage*

Following the pre-seed stage is the early stage that could be further divided into two micro-stages: seed and launch[28].

Seed

The first one represents the process of the "seed" in which the project is transformed into reality. More precisely, it is the moment in which a business model is created, that is a descriptive model of how an organization generates revenues by providing its clients with products and/or services. Throughout this stage a business plan is developed and a MVP (Minimun Viable Product), a product with basic characteristics to be launched in the market, is born[29]. The first investments start to come in thanks to business angels, crowdfunding campaigns or startup accelera, not exceeding the amount of half million euros.

Launch

The second stage is the so call launch of the startup and coinciding with the proposal of the idea to the market. This phase, characterized by a high level of uncertainty regarding the probability of the idea's success, ha as a major concern the need for an elevated amount of financial resources opposed to

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[28] R. Corigliano, *Il venture capital: finanziamento dell'innovazione, capitale di rischio e nuovi mercati finanziari*, Bancaria Editrice, 2001, p. 44.

[29] http://its-campus.com/blog/ciclo-vita-startup/.

the lack of revenues. Even at this stage, the investments are made by business angels, crowdfunding campaigns or startup's accelerators.

1.5.3 Growth stage

Following various steps of validation of the business project (pre-seed and seed stages), the startup finally starts its growth phase together with a commercial development. During this step, the rounds of financing take place and the nominal capital is gathered. For semplicity of explanation, the growth phase can be divided into the early growth stage and the sustained growth phase.

Early growth stage

The first one is the stage focused mainly on the elebaoration of a business model, a marketing plan and the commercial strategies, necessary to acquire new clients and expand towards an international context. The Series A and B rounds of financing correspond tomthe early geothermal stage. These types of financing methods are usually made by venture capital, once the company has overcome the track record[30]. The track record is a first group of clients, followed by a constant revenue and a concrete market validation of the idea proposed by the startup.

- *Series A financing rounds*: these are quite large financings necessary to attack the market, enter the market, to launch collateral products/services or to develop new distribution channels. They concern the first round of financing in large scale for the risk capital of a company; the other involved are the VC. The series A financing

[30] https://www.altalex.com/documents/news/2020/04/15/da-startup-a-scaleup-l-importanza-del-round-di-finanziamento-di-serie-b.

rounds usually confers between 2 and 10 millions of euros to abusiness and supply the company with the necessary financial resource to completely develop itself on a large scale.

- *Series B finanacing rounds*: the se the financings assigned to a ripe startup that needs to consolidate its position. Therefore they are characterized by a lower level of riskiness than the others. With the achievement of a financing round of series B, the startup becomes a scale up which is characterized by the realization of the business model. In other words, the scale up is the evolution of a startup that was able to affirm itself on the market and it is ready for a dimensional growth. These types of investments are generally made by venture capital and private equity funds. If talking about the amount of money deployed, they are higher investments compared to the financings of a financing round of Series A. Usually the investments of a scale up phase exceed 10 millions euros, with a maximum threshold of 100 million euros.

Sustained growth stage

This phase has as objective the achievement of an exponential growth of the business with a corresponding augmentation of profit. However, only few and rare cases of startup businesses are able to achieve this milestone. To this stage are related the Series C financing rounds, characterized by a low level of riskiness and a low level of return. A clear difference among these types of financings and the Series A or B financing rounds is the amount inventested by privity equity investors and banks together with big companies of venture capital. Often this stage precede the Initial Public Offering (IPO) and is aimed at the consolidation of the business. However, it is important to note that after Series C financing rounds, the company could need further series of investments, necessary to achieve the maximum value that a startup could have before its quotation within the stock market or before its transfer to a more consolidated company.

1.5.4 *Exit*

The exit, also called the way out, determines the transition from the status of startup to another phase. It represents the moment during which the investors obtain the maximum possible return for their investments. The major exit options could be[31]:

- The quotation in the stock market: the company has such a success to have an IPO (Initial Public Offering). The investors could choose between sell all of theirs sthares or, more frequently, a part of them;

- Trade sale: the company is sold to a third party, usually a big competitor that decided to purchase an innovative startup by letting the investors choose to cede all or just a certain amount of their shares by achieving a capital gain;

- Buyback: the founds reacquire the shares that have previously sold to the investors.

Innovative companies tend to follow a hierarchy in funding sources, where equity financing is preferred over debt because it is less expensive and better suited to business objectives.

In this scenario, venture capital plays a critical role, particularly during the initial and early growth stages of a company's development. Besides providing financial resources, it also contributes with specialized expertise, essential during phases with a high risk of failure.

However, venture capital is not always suitable for funding every project, especially those still in their early stages, such as the seed or startup phase. This limitation, known as the *small ticket problem***,** can be addressed through the involvement of informal equity investors, such as family, friends & fools, or business angels, who are willing to invest smaller amounts in activities in their embryonic stages of development.

[31] https://www.startupgeeks.it/ciclo-vita-startup/.

Additionally, it is worth noting that the distinction between the different funding sources is not always clear-cut, and there is a high degree of complementarity among them.

1.6 Tools for startup evaluation for investment purposes

Startups seeking funding to support the launch of their activities must present their business projects to potential investors. To assess the investment opportunity and make informed decisions, investors usually review documents prepared by startups, primarily the elevator pitch and the business plan.

1.6.1 Elevator Pitch

The elevator pitch is a brief document designed to clearly convey the business idea while highlighting its benefits and growth strategies. Often, this document serves as the initial screening tool used to identify promising startups, which are then invited to submit a more detailed business plan. An effective elevator pitch should include:

- *Business Idea*: A concise and clear description of the project and the market needs it aims to address.
- *Team*: An overview of the skills and expertise of the entrepreneur and key team members.
- *Development Strategy*: The methods and pathways the company intends to pursue for growth.
- *Profitability*: A short overview of the key economic and financial forecasts.

1.6.2 Business Plan

The business plan is a comprehensive document that provides a detailed overview of the entrepreneurial project, the strategic decisions, operational methods, financial prospects, and funding requirements necessary to execute the idea.
The essential components of a business plan include:

- *Executive Summary*: The most critical section that briefly summarizes the document's contents in a few pages, aiming to capture the investor's interest quickly.
- *Company Profile*: A presentation of the company, including its legal structure, mission, organizational chart, and objectives, along with a history of the enterprise highlighting strengths, achievements, and existing challenges.
- *Industry Analysis*: A detailed analysis of the target sector, including insights into potential customers, suppliers, and competitors.
- *Product/Service Description*: A detailed explanation of the products or services offered by the business.
- *Market Analysis*: An assessment of the target market and realistic projections for the company's future sales.
- *Team*: A description of the roles, skills, and professional backgrounds of the team members.
- *Strategic Plan*: The methods and strategies the business will implement to achieve its objectives.
- *Marketing Plan*: Details of advertising campaigns and distribution strategies that will be employed to promote the business.
- *Operational Plan*: A description of the necessary operational activities to achieve business goals, including production, commercialization, R&D activities, facilities, and human resources management.
- *Financial Plan*: A section focusing on financial needs, including projected income statements and balance sheets for the next 3 to 5 years.

1.7 How to finance a startup

One of the main challenges a startup faces is securing the necessary funding for both the initial launch and the development of its activities. The development phase is often characterized by high costs and delayed revenue generation, resulting in lack of the "guarantees" typically required by traditional financial channels, such as banks, for credit approval.

In the absence of support from the banking system, many entrepreneurs finance their ventures through personal savings, loans from family, friends, or acquaintances.

This chapter begins by examining the main equity financing tools, including bootstrapping, the three "F"s (Family, Friends, and Fools), business angels, equity crowdfunding, venture capital and private equity funds, Initial Coin Offerings (ICOs), and participatory financial instruments. It then explores debt-based financing options, such as minibonds, convertible notes, convertible bonds, convertible loans, mezzanine debt, lending-based crowdfunding, invoice trading, and direct lending.

The paragraph is strictly linked to the previous one in which each different phase of a statrtup’s lifecycle was associated to a specific financing method.

Based on this context, a key distinction among funding sources lies between equity financing and debt financing. The former allows resources to be obtained by bringing in new shareholders who acquire shares or stakes issued by the company. The latter involves obtaining capital through loans from third parties, which must later be repaid or converted into equity upon reaching specific deadlines or the occurrence of certain events.

1.8 Equity financing tools

1.8.1 "Bootstrapping" and the three "F's"

In the early stages of a company's development, often referred to as the embryonic phase, the main equity financiers are the founders themselves (bootstrapping) and the so-called "three F's": family, friends, and fools.

Bootstrapping involves self-financing, relying on personal resources and revenue from initial paying customers. However, this approach alone is often insufficient. In such cases, one can turn to close acquaintances, including friends and family, to secure funds and increase the startup's capital. The "three F's" model is neither unusual nor trivial: for example, WhatsApp was founded by two former Yahoo! employees who initially relied on this approach before receiving venture capital funding two years later.

Generally, these investors contribute capital during the high-risk initial phase, but their financial contributions and expertise are often limited. One major advantage of this method is that it allows the company to retain significant autonomy during its critical early stages. However, to accelerate business growth, additional financial resources and the involvement of new investors often become necessary.

1.8.2 Business Angel

A business angel, or angel investor, is a private investor who chooses to risk their capital to support an innovative startup, receiving an equity stake in return and becoming a shareholder. Beyond financial contributions, these "angels" provide skills, networks, and expertise, offering critical resources for the development and growth of the young company.

This figure, defined as "informal," differs from institutional equity investors like venture capital and private equity funds due to its less structured approach and the absence of extensive analytical processes. Angel investors are often driven not only by financial goals but also by personal interests in a specific cause or technology, ethical motivations, or the desire to tackle a challenging opportunity.

Typically, they are former entrepreneurs, retired or active managers, or independent professionals who want to engage in innovative and high-risk ventures with the potential for substantial returns. Their aim is to achieve a profit or capital gain within a 4-5 year period.

Business angels generally invest in the early stages of a startup (seed and startup/launch), contributing amounts ranging from €5,000 to €200,000. In some cases, multiple angel investors collaborate to share risks, collectively raising amounts that can reach up to €500,000. In Italy, many business angels operate through structured associations such as IAG (Italian Angels for Growth) and IBAN (Italian Business Angel Network).

According to the annual report by the Italian Business Angels Network Association (IBAN), there are approximately 5,000 active business angels in Italy. The latest sector monitoring data highlights several positive trends.[32]

1.8.3 Equity crowdfunding

Equity crowdfunding is an investment method that allows a "community" of investors to financially support innovative startups, as well as innovative or traditional SMEs, through authorized online platforms. In exchange for their financial contributions, investors receive equity shares in the funded companies.

This approach to fundraising, introduced in Italy through the Growth Decree bis (D.L. 17/2012) and converted into Law 221/2012, is relatively new. Italy was the first country in Europe to adopt a specific and comprehensive regulatory framework for equity crowdfunding. The declared aim of this legislation was to facilitate the collection of risk capital via the internet, thereby promoting the creation and development of innovative businesses.

This decree is also the one that established the status of innovative startups, as discussed in the previous chapter. For a more in-depth analysis, reference is made to the following chapter.

[32] http://www.iban.it/it/comunicati-stampa?page=1.

1.8.4 Private Equity and Venture Capital funds

The term private equity refers to investment operations carried out by professional operators in companies, usually unlisted, through participation in their risk capital. This activity involves significant and long-term acquisitions of company shares, with the aim of increasing the enterprise's value over the medium term and achieving substantial profits upon the sale of these shares.[33]

Investment can occur in two ways: acquiring shares already owned by existing shareholders or subscribing to newly issued shares, thereby injecting fresh capital directly into the target company.[34]

Venture capital (VC), also known as risk capital, is a form of investment characterized by high risk, as it is typically aimed at financing startups and innovative businesses. In return for the provided capital, venture capital funds receive an equity stake, whose size depends on the company's valuation, as well as one or two seats on the company's administrative board.

According to *AIFI (Italian Association of Venture Capital and Private Equity)*, venture capital is considered a subset of private equity, focusing on early-stage businesses in high-growth potential sectors that also have the capacity to deliver exceptional economic returns.

A venture capital fund can be private, public, or mixed. In Italy, to operate, it must take the legal form of an asset management company (SGR). Unlike individual investors who finance startups with personal resources, venture capital funds pool capital from institutional investors such as banks, foundations, insurance companies, pension funds, and sovereign funds. These investors, by contributing to the fund, become *Limited Partners*, while the fund's managers, or *General Partners*[35], actively oversee its operations.

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[33] R. Corigliano, *Il venture capital: finanziamento dell'innovazione, capitale di rischio e nuovi mercati finanziari*, Bancaria Editrice, 2001, p. 30.

[34] *3°Quaderno di Ricerca la Finanza alternativa per le PMI in Italia*, Unioncamere - Politecnico di Milano, November 2020, p.55.

[35] R. Corigliano, *Il venture capital: finanziamento dell'innovazione, capitale di rischio e nuovi mercati finanziari*, Bancaria Editrice, 2001, p. 92 and following.

The fundraising phase concludes once the fund's target is met[36], enabling it to commence market activities. At this stage, the fund evaluates startups based on its focus, considering the industry (e.g., fintech, biotech, robotics), the enterprise's development phase, and the investment amount.

This is followed by the *deal flow***,** the process of gathering investment proposals, and pitches[37], which may take place through both formal and informal channels.

1.8.5 ICO

An innovative and growing form of financing is the *Initial Coin Offering (ICO)*, a type of crowdfunding that enables project promoters to raise funds by issuing a cryptocurrency.

Typically, the issuer is a startup seeking to finance the development of a product or service. In exchange for the capital raised, "tokens" (digital units) are issued, each representing a unit of cryptocurrency. The integrity and authenticity of these tokens are ensured through an authentication system based on *blockchain*[38] technology.

1.8.6 Participatory financial instruments

Participatory financial instruments (SFP), introduced by the corporate law reform of 2003 and regulated by Article 2346, paragraph 6 of the Italian Civil Code, are gradually becoming more prevalent in Italian corporate practice.

SFPs are hybrid financial tools that cannot be classified as either shares or bonds. They are regarded as credit securities and accounted for as equity.

[36] https://startupitalia.eu/133119-20200629-funziona-un-fondo-venture-capital.

[37] A pitch-startup is a presentation composed of slides containing information about the startup, the entrepreneurial idea, the product, the business model etc. It is prepared to be delivered to investors in order to impress them and obtain the necessary investments.

[38] A blockchain (literally a chain made of blocks) is a structure build on unchangeable and shared data. It could be explained as a digital record in which voices are grouped in “blocks” forming a chain and following a chronological order.

These instruments grant subscribers the right to share in the economic and administrative results of the company but do not guarantee the return of the invested capital. Additionally, they can be converted into equity within a specified timeframe or under certain conditions.

It should be noted that only startups structured as joint-stock companies or innovative startups organized as limited liability companies (S.r.l.) are eligible to issue SFPs. For this purpose, the company's articles of association must explicitly allow their issuance. Companies opting to utilize SFPs must draft detailed regulations outlining their main features and terms of conversion.

Despite their potential, SFPs are still rarely used, likely due to the associated bureaucratic requirements, the costs of issuance, and the limited awareness about this financial instrument.

1.9 Debt financing tools

The use of debt financing tools could be, undeterred certain conditions, more convenient than the use of equity financing tools baceause of two essential reasons. The first one is the avoidance of the entry of new partners into the company in its early stages that could cause watering down of the participation of the fuonding members. The second reason is the avoidance of an evaluation of the company. This operation is necessary in the cause the equity financing tools' utilization, but it is hard to implement since we are considering new businesses, without a well-define market to penetrate.

Moving onto the analysis of the debt financing market, the main tools user are: mini-bonds, convertible notes, convertible bonds and participatory financial instruments, the convertible loan, the mezzanine debt, lending-base crowdfunding, invoice trading and direct lending.

1.9.1 Minibonds

Minibonds are bond instruments issued by small and medium-sized Italian companies operating outside the financial sector, with medium- to long-term maturities. These debt securities are traded on capital markets and subscribed to by qualified and professional investors. They allow companies to raise capital, with repayment following predefined terms and remuneration agreed upon through coupon payments.

Introduced by the "*Decreto Sviluppo*" (D.L. 83/2012), minibonds extended the ability to issue bonds to non-listed companies, excluding micro-enterprises and banks. Eligible companies must have annual revenues exceeding 2 million euros, at least 10 employees, a corporate statute that allows for debt issuance (for limited liability companies), and audited financial statements. These instruments enable non-listed firms to access capital markets and reduce reliance on bank credit.

1.9.2 Convertible notes and convertible loans

Convertible notes, financial instruments originating in the U.S. venture capital market, lack a direct counterpart in Italian law. These are bonds issued by companies that, in addition to repaying the principal, allow for conversion into shares or equity under specific conditions. The debt is recorded as a liability, with conversion rights often exercised during subsequent funding rounds.

Convertible loans are financing arrangements provided by investors to startups, with options for partial repayment or conversion into equity after a set period. Unlike convertible notes, convertible loans are private agreements rather than debt securities, with terms and conversion timelines negotiated between parties. These loans are also recorded as liabilities in the company's balance sheet.

1.9.3 Mezzanine debt

Mezzanine debt is a hybrid funding tool situated between traditional debt and equity capital, offering flexibility and a tailored structure. It combines subordinated debt with an equity kicker, enabling the investor to acquire company shares and benefit from potential value appreciation.

1.9.4 Lending crowdfunding

Lending crowdfunding, or social lending, allows individuals to grant loans through online platforms in exchange for interest and principal repayment. Two primary models exist: the "*spread*" model, where the platform allocates funds, and the "*direct*" model, where investors select projects to fund themselves.

1.9.5 *Invoice trading*

Invoice trading involves selling commercial invoices via online platforms without bank intermediation to obtain immediate liquidity. Although not a form of capital raising, it has similar financial effects, making it one of the fastest-growing sectors in alternative finance.

1.9.6 *Direct lending*

Direct lending involves non-bank entities, such as alternative investment funds, directly providing medium- to long-term loans. This activity, regulated by D.L. 18/2016, has gained traction in Italy, following the global trend of banking disintermediation.

1.10 Risks of investing in innovative startup

Figure 1.2: The biggest difficulties according to entrepreneurs during crowdfunding campaigns for investing in innovative startup

Source: kickstarter.com

Investing in innovative start-ups entails unique challenges and significantly higher risks compared to traditional investments. Start-ups, as newly established businesses, lack historical data, financial track records, or the ability to promise dividends since any potential profits must be reinvested into the company to fuel growth.

At their core, start-ups offer an idea and a project to bring it to life. Therefore, the decision to invest often relies on emotional appreciation of the project rather than purely rational economic evaluation. Marketing materials such as pitches, videos, and visuals on crowdfunding platforms play a significant role in influencing investor decisions. Research on crowdfunding highlights the emotional factor as a key driver, which can be particularly risky for non-professional investors.

1.10.1 Risk of capital loss

Italian equity crowdfunding regulations allow investors to purchase equity shares, which are inherently high-risk. Investors become shareholders and fully assume the financial risks associated with the start-up's operations. Given that start-ups often operate in innovative but uncertain sectors, the likelihood of project failure, and the complete loss of capital, is higher compared to established businesses. Investors should only allocate funds they can afford to lose.

1.10.2 Monitoring the investments

Investing does not end with purchasing shares; it is crucial to monitor the company's progress. Shareholders can participate in general meetings, review financial statements, and stay updated on the business's health. While this documentation may seem unexciting, it provides valuable insights for determining whether to maintain or sell the investment. Investors must proactively follow the company's website for updates, as crowdfunding portals are not obligated to publish information after the fundraising concludes.

1.10.3 Dilution of shares and option rights

If the start-up conducts additional capital increases, existing shareholders need to exercise their *pre-emption rights* to maintain their ownership percentage. Failure to do so can lead to dilution, reducing their voting power and share of future dividends. Shareholders must also be aware of control changes within the company, as start-up statutes often provide rights to exit or co-sell shares in such cases.

1.10.4 Illiquidity risk

Start-up equity shares cannot be traded on regulated markets while the company holds its “innovative” status. This restriction, combined with the lack of a structured secondary market, makes it difficult to liquidate shares or determine their real value, thus increasing the investment’s illiquidity.

1.10.5 Online fraud risks

With the rise of online transactions, the risk of fraud has grown. Before investing through crowdfunding portals, investors should verify that the platform is registered with *Consob* and ensure funds are deposited into bank accounts designated for the issuing company, not directly with the portal manager.

1.10.6 Portfolio diversification

Given its high risk, investments in start-ups should constitute only a small portion of an overall portfolio, which should also include safer, more traditional instruments like government bonds, mutual funds, or insurance products.

1.10.7 Lack of initial dividends

Start-ups rarely generate profits in their early years. Under Italy’s *Decreto Crescita Bis*, they are prohibited from distributing dividends for up to four years. Any profits are reinvested to increase the company’s value. However, investors can benefit from favorable tax incentives provided under Italian regulations.

By understanding these risks and carefully managing their investments, individuals can approach start-up crowdfunding with greater awareness and caution.

Chapter 2 – CROWDFUNDING

Traditional financing methods often present significant barriers for startups and SMEs due to stringent requirements, high interest rates, and lack of collateral. Crowdfunding, while offering a viable alternative, comes with its own set of challenges, including risks of fraud, illiquidity, and regulatory uncertainties. This study seeks to analyze the role of crowdfunding as a financing tool, exploring its benefits, challenges, and long-term viability.

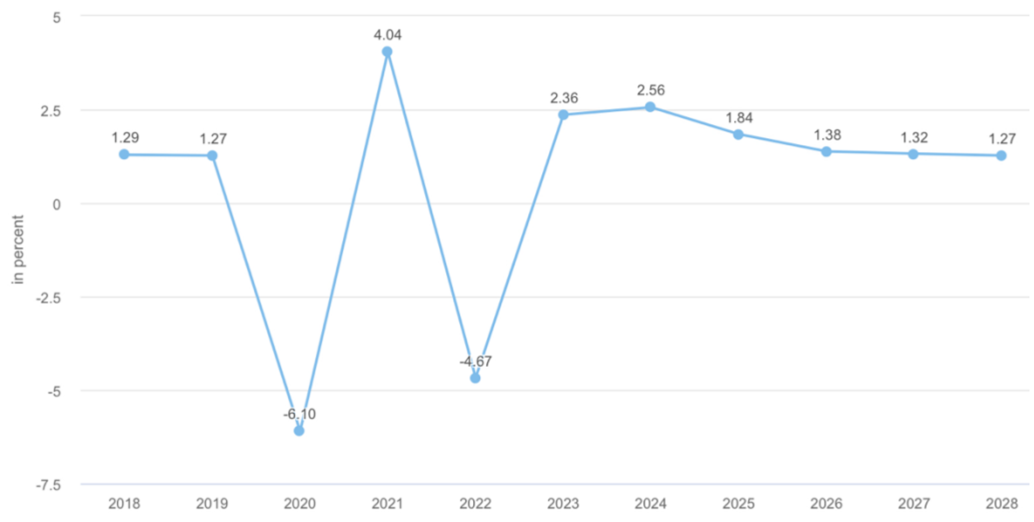
The European Union defines crowdfunding as an emerging alternative form of financing that connects those who can give, lend, or invest money directly with those who need financing for a specific project.

Crowdfunding can be defined as a form of cooperation among a group of people who pool their resources, typically through the internet, to finance or support entrepreneurial projects promoted by other individuals or companies.

It is also referred to as grassroots financing because it relies on contributions from a large number of people donating small amounts, rather than substantial investments from a single source.

Crowdfunding, first introduced in the U.S. in 2008, has gained significant attention as a financial innovation aimed at easing financial constraints for small businesses and startups. The market has experienced rapid growth. To further expand the use of crowdfunding as a means of increasing access to capital for startups and small enterprises, the JOBS Act of 2012 legalized equity crowdfunding, a specialized form of crowdfunding. This legislation allows investors to purchase equity shares in startups online. The act is considered transformative for early-stage financing, as it enables not only accredited investors to buy unregistered securities online (commonly known as "Title II equity crowdfunding") but also allows millions of non-accredited investors to participate ("Title III equity crowdfunding"). This marks the first time since the Securities Act of 1933 that private investment opportunities have been broadly accessible to non-accredited investors.

Figure 1.3: Crowdfunding's market transactional growth



Source: https://www.statista.com/outlook/dmo/fintech/digital-capital-raising/crowdfunding/worldwide#transaction-value.

Unlike traditional funding sources, such as bank loans or venture capital, equity crowdfunding stands out for its model of raising capital directly from a large number of investors, often in relatively small amounts. The process involves minimal formal intermediation. However, the absence of financial intermediaries in this market raises concerns about how information asymmetries between startups and investors are addressed. In situations where entrepreneurs are unable to credibly communicate with potential backers, mitigating information asymmetry requires the aggregation of knowledge from informed market participants and its transmission to less informed ones.

In traditional markets, price fluctuations often serve as a mechanism for information transmission. However, in equity crowdfunding, the price is predetermined by entrepreneurs, eliminating the possibility of price adjustments based on disclosed information. This fixed pricing model may hinder effective information aggregation.

The process of crowdfunding involves the challenges of information asymmetry, particularly adverse selection, within the equity crowdfunding framework. Adverse selection, a long-standing issue in economics and finance, is especially pertinent in early-stage funding.

Innovative ventures are widely acknowledged as vital drivers of long-term economic growth, contributing to new technologies, industries, and markets. However, many startups face the "*valley of death*," an early-stage funding gap that is difficult to bridge. The inherently risky and unpredictable nature of innovation often results in funding shortages from traditional sources like venture capital or angel investors. Against this backdrop, crowdfunding has emerged as a viable alternative, leveraging the internet to secure contributions from numerous individuals.

Unlike conventional early-stage funding methods, crowdfunding enables entrepreneurs to finance the development of new products through smaller contributions from a broader audience. According to Rau's statistics, the growth in crowdfunding volumes is among the fastest documented in the history of financial innovation. However, because funds are raised for products still under development, founders must demonstrate project quality to potential investors and convince them to invest. To achieve this, founders provide detailed descriptions of their projects on crowdfunding platforms. These descriptions typically include the concept, associated risks, team experience, and project plans. However, such information is qualitative, difficult to verify, and may be perceived as unreliable or as "cheap talk."

Founders are advised to carefully craft their project descriptions to enhance credibility and increase the likelihood of success. While existing research has focused on the content of project descriptions, there is limited understanding of how the tone and style of these descriptions impact credibility.

Ambiguous language characterized by words like "*contingency*," "*uncertain*," "*might*," "*possible*," and "*approximate*" can be perceived as withholding information and may undermine credibility. This raises the question of whether similar patterns apply to crowdfunding. The answer is complex, given the online nature of crowdfunding, the lack of explicit disclosure requirements, and the inability of investors to immediately verify founders' claims. Additionally, since many innovative projects are in early stages of development and involve significant uncertainty, founders may find it challenging to present their projects with reduced ambiguity while maintaining credibility.

In this chapter, an effort has been made to analyze crowdfunding as a financial tool from a general perspective, providing a clear definition of the phenomenon and tracing its key stages of development.

The discussion then focused on the various crowdfunding models, starting with the traditional, or so-called basic models, and later exploring the newer models that have emerged in recent years, including the hybrid pre-purchase model.

Significant attention has been dedicated to the regulatory framework governing crowdfunding, examining Italian and European regulations, particularly the new EU Regulation, as well as the American framework under the JOBS Act.

2.1 Literature Review and Theoretical Frameworks

The concept of crowdfunding can be traced back to the 18th and 19th centuries when it emerged as a form of crowdsourcing. However, it was only in recent years that crowdfunding became widely accessible, largely due to advancements in technology and communication tools. These innovations simplified global interactions and connections, contributing to the remarkable success of crowdfunding as we see today. A significant factor behind its success lies in the ability to tap into motivations that, as noted by Danae Ringelmann, co-founder of Indiegogo.com, inspire people to contribute. These include a passion for the project, trust in its creator, the desire to be part of something greater, and receiving a tangible reward.

To better understand this fundraising method, it is crucial to differentiate between the terms "*crowdsourcing*" and "*crowdfunding*," which are often incorrectly used interchangeably. Crowdfunding involves raising money from a large group of individuals, while crowdsourcing focuses on gathering ideas, services, or resources from a wide network of contributors.

The term "*crowdsourcing*" was coined by editors Jeff Howe and Mark Robinson, derived from the concept of "*outsourcing to the crowd*." Like crowdfunding, crowdsourcing gained prominence with the rise of the internet, which fostered closer connections and expanded networks. Wikipedia.org could be defined as the prime example of crowdsourcing due to the fact that it relies on voluntary contributions of knowledge from users without any financial remuneration. Crowdsourcing is a strategic tool that attracts a motivated crowd capable of delivering superior solutions compared to traditional corporate methods. Supporting this idea, diverse groups could solve problems that even specialized teams within companies could not, emphasizing that successful solutions often emerge from the collective input of a large, diverse group.

The main distinction between crowdfunding and crowdsourcing lies in the latter's lack of financial compensation. Crowdsourcing relies on individuals contributing their time, skills, and expertise toward achieving a common goal, with their reward being the collective outcome and personal satisfaction. Recognizing that the crowd could contribute financially as well as intellectually paved the way for the crowdfunding model. Following the same logic as crowdsourcing, crowdfunding collects small monetary contributions from many individuals, creating a funding pool equivalent to that of a single large investor.

Although crowdfunding began to gain global traction in the early 2000s, it initially focused on creative industries such as music, film, and video games. A notable example is Sellaband, one of the first online platforms, which helped unsigned musical artists raise funds to produce albums. The turning point in crowdfunding history occurred on February 10, 2012, when Kickstarter raised over $1 million for a single project, Elevation Dock, which ultimately collected $1.46 million, far exceeding its initial goal of $75,000 (Iosio and Valentinuz, 2016). In Italy, the first crowdfunding platform, *Produzioni dal Basso*, was launched in 2005 to support cultural self-productions through small-scale funding.

Additionally, crowdfunding enables ordinary individuals to invest in innovative startup ideas. Non-professional investors benefit by diversifying their investment portfolios, which helps reduce overall risk and volatility. Thus, crowdfunding not only addresses funding gaps but also democratizes access to investment opportunities.

Recent years have seen significant growth in the body of literature examining crowdfunding and its influence on innovation. Hussain et al. (2021)[39] investigated how knowledge sharing and innovation impact sustainable performance in Islamic banks, emphasizing the role of digital management and smart technologies in boosting organizational outcomes. Their findings are applicable to crowdfunding, where collaboration between backers and creators can improve project performance.

Similarly, Tan et al. (2020)[40] analyzed the use of digital management and smart technologies in sports education, focusing on the importance of green growth and tourism in dynamic contexts. Their research highlights crowdfunding's potential to support sustainable and innovative initiatives in diverse sectors like sports and tourism.

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[39] Hussain I, Hussain S, Akram S, Shaheen I, Niu B (2019). *The impact of knowledge sharing and innovation on sustainable performance in Islamic Banks: a mediation analysis through a SEM approach. Sustainability.* https:// doi. org/ 10. 3390/ su111 540493.

[40] Tan, X., Abbas, J., Al-Sulaiti, K., Pilař, L., & Shah, S. A. R. (2024). *The Role of Digital Management and Smart Technologies for Sports Education in a Dynamic Environment: Employment, Green Growth, and Tourism*. Journal of Urban Technology, 23(5), p. 1-32. https:// doi. org/ 10. 1080/ 10630 732. 2024.69 23272.

Mahmood et al. (2019) [41] explored the effects of corporate social responsibility practices and environmental factors on business sustainability, emphasizing the role of social media marketing as a moderating influence. This is especially relevant to crowdfunding campaigns, where social media is a vital tool for promotion and engaging potential backers.

These studies underline the evolving nature of crowdfunding and its capacity to drive innovation across various industries. However, they also point to a gap in understanding the specific mechanisms through which crowdfunding fosters innovation.

Theoretical frameworks have been instrumental in explaining crowdfunding dynamics and outcomes. This section reviews the main theories applied in crowdfunding research over the past 10 to 20 years, detailing their uses and prevalence.

Social Capital Theory emphasizes the role of social networks and their embedded resources. In crowdfunding, this theory often explains the influence of social connections and network size on campaign success. About 30% of the reviewed studies have applied this theory, underscoring its importance in understanding the social factors driving successful campaigns.

Signaling Theory suggests that individuals convey information to reduce uncertainty and bridge information gaps. In crowdfunding, project creators use signals such as endorsements and quality markers to attract backers. This theory is featured in approximately 25% of the studies, reflecting its relevance in exploring how creators effectively communicate with backers to secure funding.

The Theory of Planned Behavior (TPB) examines how attitudes, social norms, and perceived control shape intentions and actions. In crowdfunding research, TPB is used to analyze backers' motivations to support campaigns.[42] Around 15% of the studies have employed this framework,

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[41] Mahmood, et al. (2019). *The Effects of Corporate Social Responsibility Practices and Environmental Factors through a Moderating Role of Social Media Marketing on Sustainable Performance of Business Firms*. Sustainability, p. 11-12, https://doi. org/10. 3390/su111 23434.

[42] Jiang Y, Hoque MM, Park BJ (2023) *Exploring the influence of pop-up store experiences on consumer word-of-mouth intentions: the mediating role of brand charisma*. Int J Adv Smart Converg 12(4): p. 246–259.

highlighting its utility in exploring the psychological factors influencing crowdfunding participation.

Information Asymmetry Theory addresses challenges that arise when one party in a transaction has more or better information than the other. Within crowdfunding, this theory investigates how information gaps between project creators and backers affect funding decisions. Referenced in about 10% of the studies, it plays a critical role in examining strategies for mitigating these information gaps.

The Resource-Based View (RBV) focuses on the resources and capabilities organizations possess and their role in achieving competitive advantage. In crowdfunding, RBV is applied to assess how creators' resources, such as skills and networks, impact campaign success. Around 10% of the studies incorporate RBV, emphasizing its significance in evaluating resource-related factors that drive successful outcomes.

Institutional Theory explores how societal rules, norms, and beliefs shape behavior. In crowdfunding, it is used to examine how regulatory and cultural environments influence practices. Represented in roughly 5% of the studies, this theory sheds light on the broader contextual factors affecting crowdfunding activities.

Together, these theoretical perspectives provide a robust foundation for understanding the complexities of crowdfunding. By incorporating these frameworks, this study not only strengthens its empirical insights but also offers a comprehensive theoretical context for examining the multifaceted dynamics of crowdfunding.

2.2 Geographical and economic categorization of crowdfunding studies

Understanding the operation of crowdfunding in different economic settings is vital for assessing its influence on innovation. This section organizes empirical studies on crowdfunding by geographical context, differentiating between developed and emerging economies to shed light on regional variations in practices.

2.2.1 Developed Economies

In developed economies like the United States, the United Kingdom, and Germany, extensive research has explored diverse aspects of crowdfunding. In the U.S., studies by Mollick (2014),[43] Pope and Sydnor (2011),[44] and Greenberg and Mollick (2017)[45] examine factors influencing crowdfunding success, the presence of discrimination, and gender dynamics. Their findings highlight critical success factors, evidence of racial biases, and gender-related differences in crowdfunding outcomes.

In the UK, Cumming, Leboeuf, and Schwienbacher (2014)[46] conducted a comparative analysis of crowdfunding models. They found that while "keep-*it-all*" models attract more campaigns, "*all-or-nothing*" models achieve higher success rates. This insight is valuable for understanding how campaign structures influence outcomes in a mature market.

Germany has contributed insights into the regulatory impacts on crowdfunding, analyzing the effects of legal frameworks on the success and

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[43] Mollick, E. (2014). *The dynamics of crowdfunding: An exploratory study*. Journal of business venturing, 29(1), p.1-16.

[44] Pope, D. G., & Sydnor, J. R. (2011). *What's in a picture? Evidence of discrimination*. Journal of Human Resources, 46(1), p. 53-92.

[45] Greenberg MD, Mollick E (2017). *Activist choice homophily and the crowding out of private provision of public goods*. Acad Manag J 60(5), p. 1795–1817.

[46] Cumming DJ, Leboeuf G, Schwienbacher A (2019). *Crowdfunding models: keep-it-all vs all-or-nothing.* Finan Manag 48(1), p.77–102.

growth of equity crowdfunding. This work underscores the importance of supportive regulations in fostering crowdfunding markets.

Overall, research in developed economies highlights the significance of regulatory environments, social dynamics, and market maturity in shaping crowdfunding practices.

2.2.2 Emerging Economies

In emerging economies, the focus shifts to the role of social networks and peer-to-peer interactions, reflecting different stages of market development and regulatory contexts. In China, peer-to-peer lending was examined, showing that social networks heavily influence funding decisions and campaign outcomes, underscoring the importance of social connections in a rapidly expanding market.

In India, the role of social networks in crowdfunding success was explored. These findings reveal that interpersonal relationships and community support are pivotal in driving crowdfunding success in evolving financial ecosystems.

A comparison of studies from developed and emerging economies reveals key differences in how crowdfunding operates and its impact on innovation. Developed economies tend to focus on regulatory frameworks, social dynamics, and market maturity, whereas emerging economies emphasize social networks and peer-to-peer interactions. These distinctions highlight and the diverse applications of crowdfunding in different economic contexts.

2.2.3 Crowdfunding in Italy according to the Opstart survey

The Opstart research reveals that one of the main barriers to crowdfunding adoption in Italy is the lack of financial literacy. Providing proper education in this field would offer a significant advantage for the entire country. In recent years, the investment landscape has undergone a significant transformation, with crowdfunding increasingly becoming a method of financing for startups and innovative projects in Italy. However, despite progress in terms of regulation and awareness, there are still many misconceptions about crowdfunding in Italy. The "*Crowdfunding 2024 Survey*," conducted by Opstart in collaboration with BVA DOXA, offers an in-depth look at Italian investors, debunking some myths about crowdfunding in Italy and providing a clear outlook for future opportunities.

According to the survey, more than half of Italians (54%) actively invest, primarily relying on advice from their bank or financial advisor (39%), while a minority (15%) explores alternative options such as online platforms. This data highlights a significant gap between those who prefer traditional channels and those who adopt a more independent approach, particularly within the crowdfunding sector in Italy.

In terms of investment strategies, 51% of respondents adopt a cautious approach, focusing on low-risk products, while 46% diversify by including high-risk products to maximize returns. Only 3% choose to invest entirely in high-risk products, reflecting a certain caution towards new investment forms like crowdfunding in Italy.

Despite 44% of Italians being aware of crowdfunding in Italy, only 6% actually use it as an investment tool. The Opstart research points out that this distrust is fueled by the perception that crowdfunding is a high-risk (18%) or unreliable (16%) investment. This contrasts with the reality of a market that, when properly regulated, offers potentially high returns and greater portfolio diversification. Opstart's CEO, Giovanpaolo Arioldi, emphasizes that crowdfunding platforms in Italy, including Opstart itself, are regulated by Consob and the Bank of Italy, ensuring a high level of safety and transparency. "*Although often perceived as poorly regulated and risky, crowdfunding can actually be a profitable investment opportunity, governed by regulations that all European platforms must comply with, such as the recent European Regulation 2020/1503*," stated Arioldi.[47]

A key obstacle to the adoption of crowdfunding in Italy is the lack of financial education. In the past two years, the percentage of people familiar with basic concepts like risk diversification (54.6%) and the relationship between risk and return (46.6%) has decreased. Only 38.1% of respondents understand compound interest, which is crucial for understanding long-term returns.

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[47] https://www.opstart.it/it/blog/indagine-crowdfunding-2024-investitori-falsi-miti.

A higher level of financial literacy could help investors better understand crowdfunding in Italy and integrate it into their diversification strategies. In particular, over 90% of Italians believe that financial education should be introduced in schools, and 79.7% agree it should be offered in workplaces.

In the last two years, familiarity with inflation (73.8%) and simple interest rates (46.5%) has increased. However, knowledge of risk diversification (54.6%), the risk-return relationship (46.6%), and compound interest has declined, with just over a third of financial decision-makers (38.1%) claiming to be knowledgeable about the latter concepts.

"*Today, many savers risk missing out on higher returns by not using innovative tools like crowdfunding, which can be an excellent ally for diversifying and growing their capital*," the report states.[48]

According to the Opstart survey, most crowdfunding investors in Italy are men (85%), highly educated (54.9% hold a degree), and predominantly reside in Northern Italy (47%). The most represented age groups are those between 30 and 50 years old (48%) and those over 50 (41%).

Interestingly, despite 62.7% of investors stating they lack deep financial knowledge, 77.9% are optimistic about improving their financial situation through crowdfunding in Italy.

Crowdfunding in Italy enables investors to support innovative sectors with high growth potential. The most popular sector is the Green Economy, with 51% of investors funding sustainable projects, followed by Real Estate (39%), Fintech (21%), and Big Data (19%).

Geographically, Northern Italy leads in crowdfunding investments, with Lombardy accounting for 42% of the total. At the provincial level, Milan remains the primary financial hub, accounting for over 15% of investments.

In Central Italy, Lazio stands out with a strong presence of investors, with Rome representing 5% of investments. In Southern Italy, Campania leads with 3%, reflecting a growing interest in the southern regions.

Crowdfunding in Italy represents a tremendous opportunity to democratize access to capital and support innovative projects. However, to fully capitalize

[48] https://www.opstart.it/it/blog/indagine-crowdfunding-2024-investitori-falsi-miti.

on this potential, it is essential to dismantle the myths that still surround this tool.

According to the Opstart Survey and data from the BVA DOXA survey, several barriers still prevent the widespread adoption of crowdfunding in Italy, the foremost being distrust (33%), followed by a lack of transparent information on available tools (31%) and a perceived high risk of capital loss (25%). Other less common reasons include insufficient returns for the risk (16%), lack of liquidity in case of divestment (15%), lack of regulation (15%), associated costs (10%), high entry investment (10%), poor diversification (9%), and bad previous experiences (4%).

2.2.4 Evolution of Crowdfunding Platforms

Initially, crowdfunding campaigns were conducted on self-created websites before the advent of platforms like Indiegogo (2008) and Kickstarter (2009). An early example includes the UK-based software company Trampoline Systems, which attempted to raise £1 million but ended up selling securities only to accredited investors. Since then, platforms have streamlined the crowdfunding process by adhering to country-specific rules and increasing project visibility, thereby accelerating global growth.

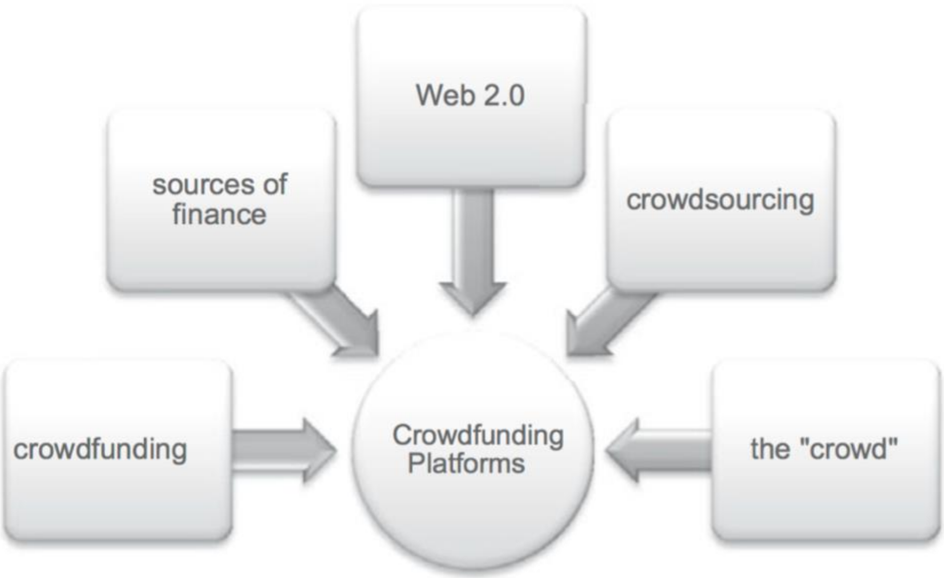
Modern platforms operate in diverse formats, with some specializing in specific types of projects and others allowing entrepreneurs to choose between models such as "*all-or-nothing*" or "*keep-it-all*" funding. Platforms like Indiegogo now even offer equity crowdfunding options.

Social media has further facilitated the development of online platforms, connecting businesses with small-scale individual investors willing to make minor contributions. These collective contributions can result in significant funding.

The reduced costs of online platforms have made it easier for small businesses to access a wider audience, promoting crowdfunding as an alternative funding source for innovative projects that may not secure traditional financing.

Platforms serve as intermediaries that bring together entrepreneurs and backers, reducing costs such as search, information collection, and negotiation expenses. Unlike traditional financial intermediaries like banks, crowdfunding platforms enable the crowd to make funding decisions and primarily serve as information-sharing hubs to reduce asymmetry and fraud risks.

Figure 1.4: Orchestrating factors for crowdfunding platforms



Source: Danmayr, 2014

2.2.5 Crowdfunding Regulations

Crowdfunding platforms require entrepreneurs to disclose substantial information to attract backers, balancing transparency with the risk of idea replication. Fraud prevention is essential for maintaining platform integrity and sustaining industry growth. Regulatory attention has particularly focused on equity crowdfunding due to its public offering of financial securities, which are heavily regulated.

The first regulatory framework for equity crowdfunding was proposed under the *U.S. JOBS Act* of 2012 and enforced by the *SEC* in 2016. Since then, other countries, including Italy, France, Germany, Belgium, the UK, and Austria, have implemented similar regulations. These frameworks aim to minimize risks for investors, such as fraud or financial losses, while fostering the growth of crowdfunding. Loan-based crowdfunding has also been regulated in some countries, such as France and the UK.

In conclusion, a supportive legal environment is essential for the sustainable growth of crowdfunding. By reducing risks for investors and providing clear regulations, countries can encourage the use of crowdfunding as a viable funding mechanism for innovative projects.

2.3 The Crowdfunding Process

The crowdfunding process is divided into several phases, each involving specific activities and focus areas. It can be analyzed from two main perspectives: that of backers, the supporters, and that of fundraisers, who seek funding for their projects.

From the backers' perspective, the process involves two key phases:

1. *Pre-investment phase*: backers conduct thorough due diligence on the project and assess the motivations driving their investment decisions;
2. *Post-investment phase*: during this phase, backers monitor the project's progress and consider opportunities to engage in subsequent stages.

From the fundraiser's perspective, the crowdfunding process consists of three main phases: *pre-campaign, during the campaign*, and *post-campaign*, which are further broken down into seven sub-phases:

1. *Planning*: defining objectives, selecting a platform, preparing necessary documents, and creating an execution plan with activities and deadlines.
2. *Creation*: uploading documents to the chosen platform and sharing them on social media to gather initial feedback.
3. *Review*: the platform reviews the documents to ensure compliance with regulations.
4. *Management*: promoting the campaign, interacting with users by addressing questions or comments, and gradually sharing more information to build backer trust.
5. *Results*: analyzing campaign outcomes based on the selected funding model:
    - *All or Nothing*: the campaign is successful only if it reaches the minimum target; otherwise, funds are returned to backers.

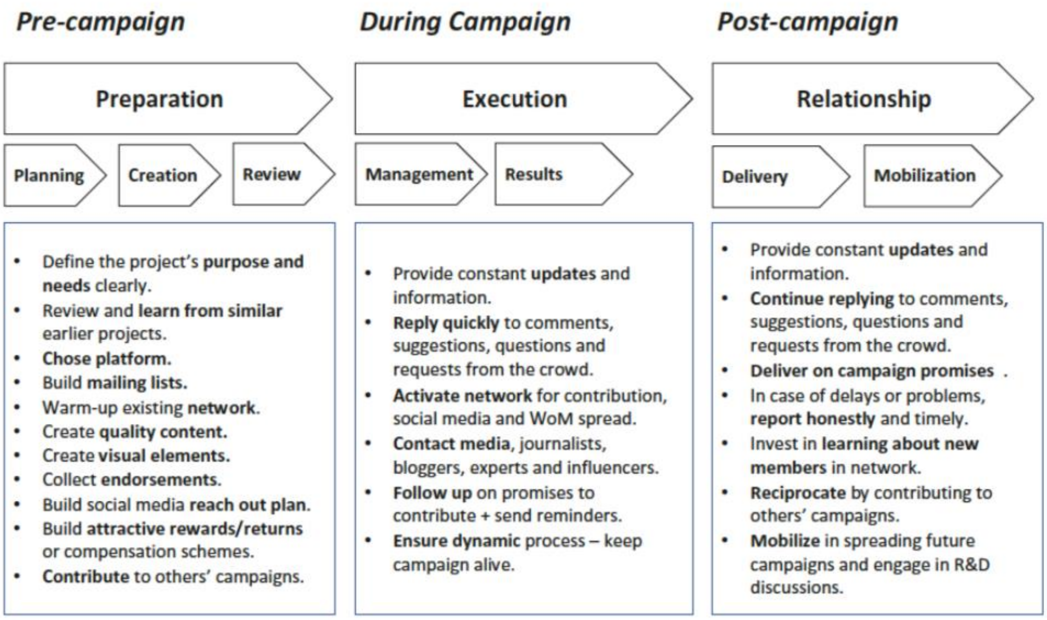
- *Take it All*: funds are accepted regardless of the total amount raised.

In this phase, platforms retain a commission, but in the *All or Nothing* model, this occurs only if the target is met.

The *post-campaign phase* includes:

1. *Delivering on promises*: fulfilling commitments by delivering products or services (for non-investment crowdfunding), repaying loans with interest (in lending crowdfunding), or updating investors on company performance (in equity crowdfunding).
2. *Developing relationships*: maintaining and strengthening ties with supporters, who represent a valuable asset for the company. A strong network of supporters can boost the success of future campaigns, though their engagement may decline if too many campaigns are launched in a short period.

Figure 1.5: The process of crowdfunding



Source: Advances in Crowdfunding, Reaseach and Practices (2020)

2.4 The traditional models of crowdfunding

Crowdfunding can be categorized into various types based on how capital is raised and the rewards offered to participants. The main models are donation-based, reward-based, lending-based, and equity-based. The first two fall under the *non-investment* category, as they do not involve monetary returns, while the latter two are part of the *investment* category due to their financial rewards. Depending on the model chosen, participants take on different roles: in donation and reward crowdfunding, the promoter is considered the campaign creator; in lending crowdfunding, they are identified as the borrower; and in equity crowdfunding, they act as the issuer. Similarly, backers are called donors in donation-based models, supporters in reward-based ones, lenders in lending-based crowdfunding, and investors in equity-based campaigns. Additionally, in recent years, hybrid crowdfunding models have emerged, combining features of traditional models to create new approaches.

Figure 1.6: Different crowdfunding models

Crowdfunding Model	**Donation Model**	**Reward-based Model**	**Lending Model**	**Equity Model**
Type of Compensation	No rewards for funders	Tangible or intangible, non-monetary rewards	Interest on investment or share of profits	Equity shares as rewards
Platform Examples	GoFundMe, CrowdRise	Kickstarter, Indiegogo, Mesenaatti	CrowdCube, Invesdor	Seedrs, CrowdCube, EquityNet, Invesdor

Source: https://core.ac.uk/download/pdf/80719599.pdf

2.4.1 The donation-based crowdfunding

Donation-based crowdfunding is the simplest form of crowdfunding, where donors altruistically contribute funds to support non-profit initiatives, social projects, or other charitable causes without expecting any tangible reward. Unlike other models, donors focus on moral recognition, such as altruism, respect, and esteem, rather than financial returns[49]. Feeling part of a project that contributes to collective well-being is crucial for the success of donation-based campaigns. This model is better suited for public projects rather than business initiatives.
Donation-based crowdfunding typically generates lower fundraising volumes than other models. In regions like Africa and the Middle East, it accounts for approximately 17% of total crowdfunding volumes, while in other continents, it represents less than 1%.[50] Nevertheless, its key advantage lies in overcoming geographical barriers, enabling donors to support causes worldwide. The growth in donations during the 2020 pandemic highlights an increasing focus on social and charitable initiatives.

2.4.2 The reward-based crowdfunding

Reward-based crowdfunding is another *non-investment* model, where backers do not receive monetary returns but are rewarded with material or intangible incentives proportional to their contribution. Rewards can include products, services, or collaboration opportunities related to the project. This model is often referred to as *pre-order crowdfunding* because supporters may receive the product before its market release, providing valuable feedback for improvement. [51]
The flexibility of reward-based crowdfunding allows individuals and

[49] Rotem Shneor, Liang Zhao e Bjorn-Tore Flaten, *Advances in Crowdfunding: Research and Practice*, Palgrave McMillan, 2020, p. 146.

[50] Ibidem, p. 146.

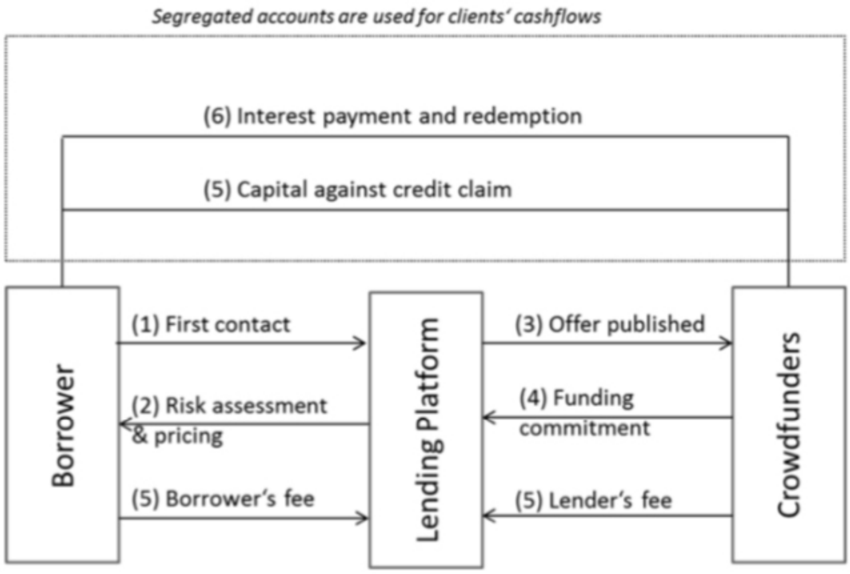
[51] Ibidem, p.121.

businesses to secure funding for new ideas or products without compromising financial independence. Additionally, the *pre-order* mechanism enables market testing and offers insights into the feasibility of the project.

2.4.2 The lending-based crowdfunding

Lending-based crowdfunding, also known as *peer-to-peer* lending, allows individuals to lend money directly to other individuals or businesses without financial institutions as intermediaries. Borrowers repay the capital with added interest by an agreed deadline. This model, active since 2005, has attracted investors seeking portfolio diversification and borrowers seeking more favorable financing conditions.
Lending-based crowdfunding currently accounts for about 97% of the global crowdfunding market, with an average annual growth rate of 93% since 2014. Platforms managing this model operate under two main schemes: *pooled* and *direct* models. In *pooled* models, platforms actively select projects and allocate funds automatically based on investors' risk-return preferences. In *direct* models, investors choose projects themselves, taking on a higher default risk.

Figure 1.7: Peer-to-peer business model



Source: Peer-to-peer Lending: opportunities and risks. European Journal of Risk Regulation, Lenz, R. (2016)

2.4.3 The equity-based crowdfunding

Equity-based crowdfunding allows investors to acquire equity stakes in a business, sharing in its entrepreneurial risks. In return, they gain ownership rights, such as dividend entitlement or profit from selling their shares. This model requires legal adjustments, including statutory changes, and a clear definition of the offer terms. Platforms hosting equity-based campaigns also provide a *pre-money valuation* of the company, which is critical for successful fundraising and attracting qualified investors in future rounds. Thanks to its structure, equity-based crowdfunding is a viable alternative to traditional financing, reducing operational costs and broadening access to global investors. According to the European Commission, this model effectively bridges the financing gap for SMEs, supporting their growth and scalability.

Italy was the first European country to introduce specific regulations for equity-based crowdfunding. This regulatory framework, introduced by Decree Law No. 179/2012 (known as the "Growth Decree bis") and later converted into Law No. 221/2012, allowed crowdfunding through online platforms, bypassing rules on public offerings. The *Consob regulation* governs equity crowdfunding, addressing both the early stages of the investment process, with rules on platform management, and the later stages, focusing on protecting non-professional (retail) investors. To safeguard their interests, retail investors must follow an "informed investment path" to ensure they understand the risks and details of the investment.

On October 20, 2020, the EU Regulation 2020/1503 and Directive 2020/1504 (amending Directive 2014/65 on financial markets) were published in the EU Official Journal and took effect on November 10, 2020. This new European framework facilitates access to financing by removing barriers that hindered cross-border crowdfunding services. However, the regulation excludes donation-based and reward-based crowdfunding campaigns.

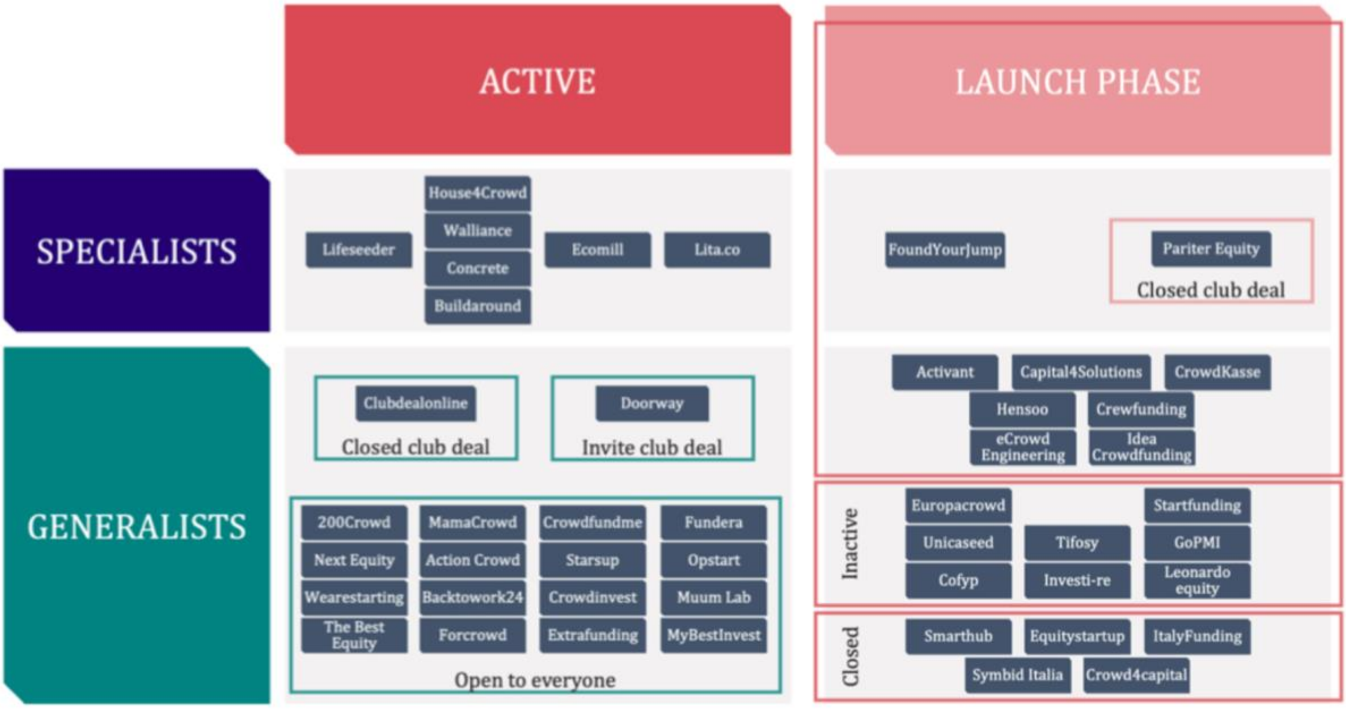
Applicable 12 months and 20 days after publication, the regulation allows platforms to operate freely across the EU, enabling investors to participate via platforms in different member states. The rules apply to European crowdfunding service providers (*ECSPs*) as long as individual issuers do not raise more than €5 million in a 12-month period.

Each *ECSP* must obtain authorization from the competent national authority and provide clear information to clients about financial risks, costs, and project selection criteria. Promoters must ensure transparency by preparing and distributing a *Key Investment Information Sheet (KIIS)* to all investors.

Initially limited to innovative startups, Decree Law No. 3/2015 (Investment Impact) extended equity crowdfunding to innovative SMEs, and Decree Law No. 50/2017 opened it to all SMEs, both S.r.l. and S.p.A.

Crowdfunding platforms connect companies with investors, who receive equity stakes in return. Platforms are categorized as generalist or specialized, the latter focusing on sectors like real estate or energy. Projects typically include funding targets and deadlines. Under the "*all or nothing*" model, funds are raised only if the target is met; otherwise, they are refunded. In the "*take all*" model, funds are provided regardless of the minimum threshold.

Figure 1.8: Italian equity crowdfunding platforms taxonomy

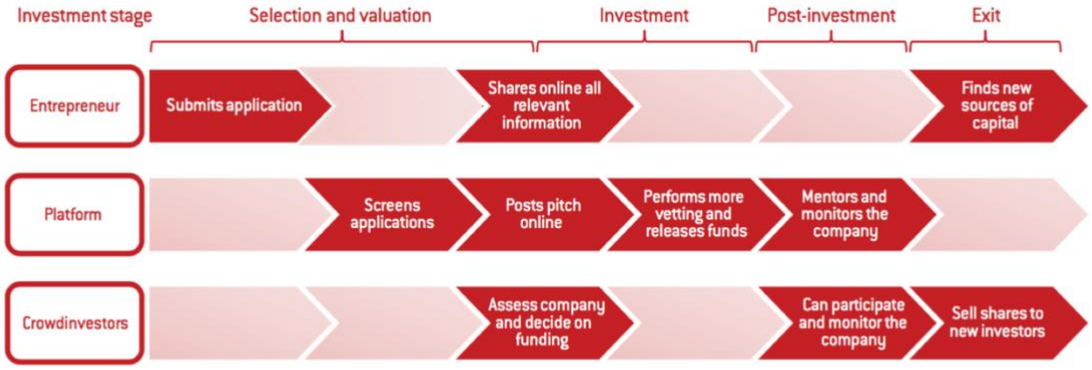


Source: Politecnico di Milano, 2020

Operational platform models include:

- *Market-place platforms*, serving as showcases for projects.
- *Platforms co-investing in projects*, currently absent in Italy.
- *Club deal platforms*, reserved for investors with high financial assets, such as “clubdealonline.com.”

Figure 1.9: Equity crowdfunding main actors and stages



Source Wilson, Testoni, 2014

Equity crowdfunding platform operators must register with Consob, which maintains two sections: the ordinary section (for authorized operators) and the special section (for entities like banks and investment firms).

2.5 New models of crowdfunding

In recent years, alongside traditional forms of crowdfunding, new models have been emerging, such as *do-it-yourself*, *corporate*, *civic*, energy-based, *invoice trading*, *real estate*, and recurring crowdfunding.

The do-it-yourself (DIY) crowdfunding model allows organizations to host and manage fundraising campaigns directly on their own websites without relying on external crowdfunding platforms[52]. Also known as independent crowdfunding, this approach is gaining popularity as many existing platforms impose increasingly stringent requirements for project approval.

Corporate crowdfunding is inspired by the concept of *Corporate Social Responsibility* (CSR).[53] Companies use this method to engage customers, employees, and local communities in financing socially impactful projects or developing innovative products and services.[54] This model is particularly prominent on platforms like "*Produzioni dal basso*."

Civic crowdfunding enables citizens to fund public projects and infrastructure[55]. A historical example is Joseph Pulitzer's campaign to finance the pedestal of the Statue of Liberty[56], demonstrating that crowdfunding existed long before the digital age and has always relied on collective support.
In Italy, notable examples include the restoration of the Portico of San Luca in Bologna, which raised €338,673 from about 7,000 supporters, and the reconstruction of Naples' Città della Scienza, destroyed by arson in 2013, which collected €1,463,867 from 2,584 backers.

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[52] https://www.crowd-funding.cloud/it/do-it-yourself-138.as.

[53] When talking about Corporate Social Responsibility (CRS), we are referring the the social responsibility of the corporation and it is referred to the ethical and moral vocation of a company's strategy.

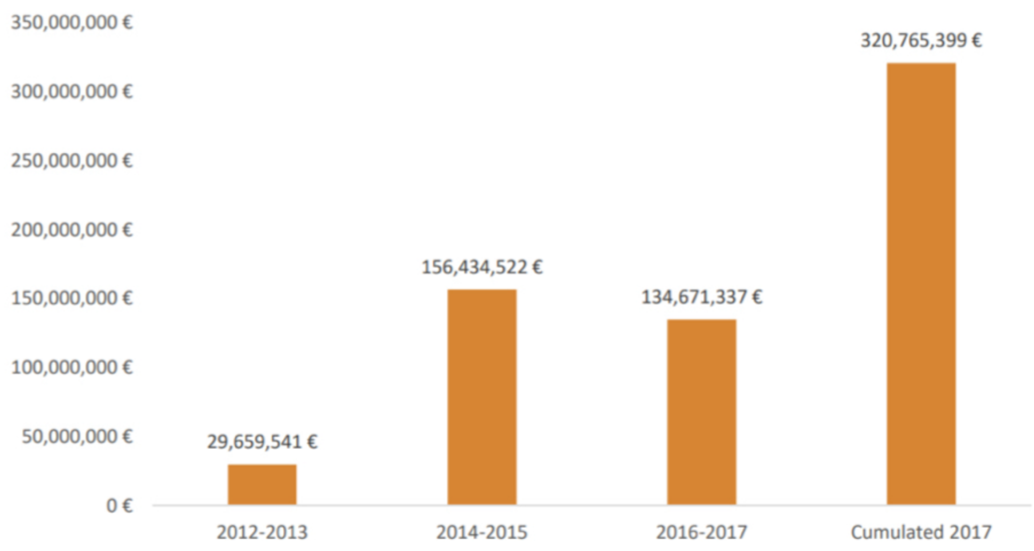
[54] https://www.crowd-funding.cloud/it/corporate-137.asp.

[55] https://www.crowd-funding.cloud/it/civic-136.asp.

[56] https://www.crowd-funding.cloud/it/le-antiche-origini-del-crowdfunding-222.asp.

Energy-based crowdfunding focuses on financing renewable energy projects and supporting the energy transition to reduce reliance on fossil fuels[57]. The emphasis is on alternative energy sources such as solar, wind, and biomass. Solar photovoltaic projects account for approximately 70% of total energy crowdfunding investments.

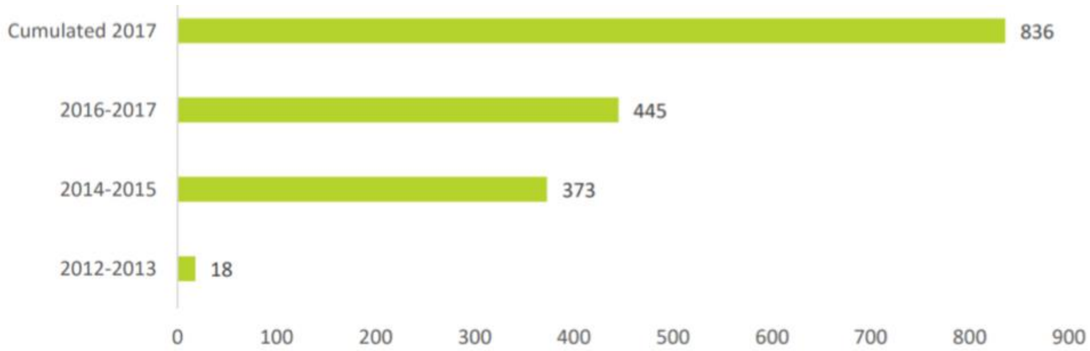
Figure 1.10: Energy crowdfunding's total volume



Source: Crowdfunding as a novel tool for district heating projects, H2020 TEMPO Project, 2018.

[57] https://www.crowd-funding.cloud/it/energetico-1421.asp.

Figure 1.11: Number of Enrgy crowdfunding project between 2012 and 2017



Source: Crowdfunding as a novel tool for district heating projects, H2020 TEMPO Project, 2018.

Invoice trading involves selling commercial invoices through online platforms. These platforms select opportunities while investors advance the invoice amount, deducting a fee as compensation for the service.

Real estate crowdfunding is a collective financing method for residential or commercial property projects, offering financial returns to investors.[58] This model addresses challenges typically associated with real estate investments, such as allowing small contributions to diversify risk across multiple projects. Additionally, project management can be delegated to developers, and investments can be liquidated via dedicated secondary markets. In Italy, this service was first introduced in March 2018 by the "Produzioni dal basso" platform, inspired by American platforms.

Recurring crowdfunding is a type of donation-based or reward-based fundraising designed for projects that require continuous, periodic funding. Unlike traditional crowdfunding campaigns, this method does not have a fixed end date. In more developed markets, there is also growing investment in sectors such as energy efficiency, bioenergy, and marine and geothermal energy sources.

[58] https://www.crowd-funding.cloud/it/ricorrente-1081.asp.

2.6 Hybrid model of crowdfunding: the pre-purchase

The pre-purchase model is a hybrid form of crowdfunding that blends aspects of *reward-based* and *equity-based* approaches and has emerged more recently. Under this model, backers are offered not only advantageous terms related to the company's services or products but are also granted an option right to purchase shares or equity at a later stage.

In simpler terms, supporters of a *reward crowdfunding* campaign gain the added opportunity to secure an option for acquiring equity during a subsequent capital issuance by the funded company. This feature makes the model particularly attractive for businesses aiming to build long-term relationships with their backers, fostering both engagement and potential financial participation in the company's growth.

Given its unique characteristics and financial implications, the *pre-purchase crowdfunding* model is not accessible to private individuals but is instead reserved for legal entities, such as companies and professional investors.

This model is especially suitable for startups and small enterprises looking to validate market demand for their products while simultaneously attracting strategic investors who may become stakeholders in future equity rounds. By bridging rewards and equity, pre-purchase crowdfunding helps companies secure both short-term funding and long-term investor interest.

Chapter 3 – INTEGRATING CROWDFUNDING INTO THE GROWTH OF GREEN INNOVATIVE STARTUP

3.1 Sustainability and sustainable investments

The concept of sustainability was formally introduced in 1987 through the Brundtland Report, published by the World Commission on Environment and Development of the United Nations. This report defined sustainable development as a process that meets the needs of the present without compromising the ability of future generations to meet their own needs. From this principle, a global debate emerged, which saw sustainability become a central concept in multiple sectors, from public policy to business management. Over time, the approach to sustainability has evolved, initially focused on ecological concerns to a more holistic vision that encompasses social and economic dimensions.

Figure 1.12: Elkington's "Triple Bottom Line", 1994.

Source: https://abofficesystems.com/chi-siamo/sostenibilitá/.

Over the years, sustainability has been broken down into a series of goals that are now formalized in the Sustainable Development Goals (SDGs), adopted by the United Nations in 2015. These 17 goals cover a wide range of areas, from the fight against poverty and hunger to promoting health and education, and protecting the environment. The SDGs represent a global commitment and serve as a guiding framework to direct the policies and actions of countries, businesses, and individuals towards a sustainable future.

3.1.1 The three pillars of sustainability

Sustainability is generally divided into three fundamental pillars, which form an integrated and interdependent foundation for any sustainable development strategy:

Environmental Sustainability: This pillar focuses on protecting the environment, efficiently managing natural resources, and reducing the ecological impact of human activities. Environmental sustainability initiatives include biodiversity conservation, reducing greenhouse gas emissions, improving energy efficiency, and promoting renewable energy sources. Sustainable management of natural resources is essential to ensure that future generations can enjoy the same ecological benefits we often take for granted today.

Social Sustainability: This aspect concerns social equity and human well-being. It encompasses human rights, social justice, improving living conditions in communities, promoting education, and protecting vulnerable populations. Social sustainability implies that business practices not only generate profits but also contribute positively to society, ensuring equal opportunities and access to essential resources for all.

Economic Sustainability: This pillar focuses on building a stable economy that grows over time without depleting environmental or social resources. A sustainable economy promotes efficiency, reduces waste, fosters innovation, and ensures that economic benefits are distributed fairly among social classes. A truly sustainable economy supports progress and the improvement of living conditions, but at the same time, it maintains ecological and social balance.

3.1.2 Corporate sustainability

Businesses play a central role in promoting sustainability. Corporate Social Responsibility (CSR) practices are one example of how companies are trying to integrate sustainability into their business strategies. CSR refers to the responsibility of companies towards the environment, society, and their stakeholders. Companies adopting CSR practices aim to reduce the negative impacts of their operations, such as pollution or social inequalities, and promote initiatives that positively contribute to society.

In addition, many companies today are committed to creating a sustainability report, which documents and communicates the environmental, social, and economic impact of their activities. This report includes key performance indicators (KPIs) that monitor the company's commitment to sustainability. Transparency in these practices is crucial for gaining the trust of stakeholders and attracting responsible investment.

One of the main initiatives supporting corporate sustainability is the Global Reporting Initiative (GRI), which provides guidelines for creating corporate sustainability reports. Companies following the GRI standards are committed to publicly accounting for their environmental and social impacts, thus improving their transparency and accountability.

3.1.3 Sustainable investments

Sustainable investments refer to investments that consider not only financial returns but also the environmental, social, and governance (ESG) impacts of the companies in which they invest. These investments aim to generate a positive financial return while simultaneously contributing to social and ecological goals.

ESG investments have become a cornerstone of investment decisions for many pension funds, sovereign funds, and private investors. The growing focus on ESG criteria is due to the awareness that sustainable investments are not only ethical but also financially advantageous in the long term, as companies that adopt sustainable practices tend to be more resilient and less risky.

Some significant examples of sustainable investment instruments include:

- *Green Bonds*: These instruments are issued to raise funds specifically for projects with a positive environmental impact, such as the development of renewable energy or energy efficiency projects.
- *Social Impact Bonds (SIBs)*: These instruments allow investors to fund projects that have a positive social impact, such as education or health programs.
- *ESG Funds*: These mutual funds select companies based on their environmental, social, and governance criteria.

3.1.4 The role of sustainable investments in financial markets

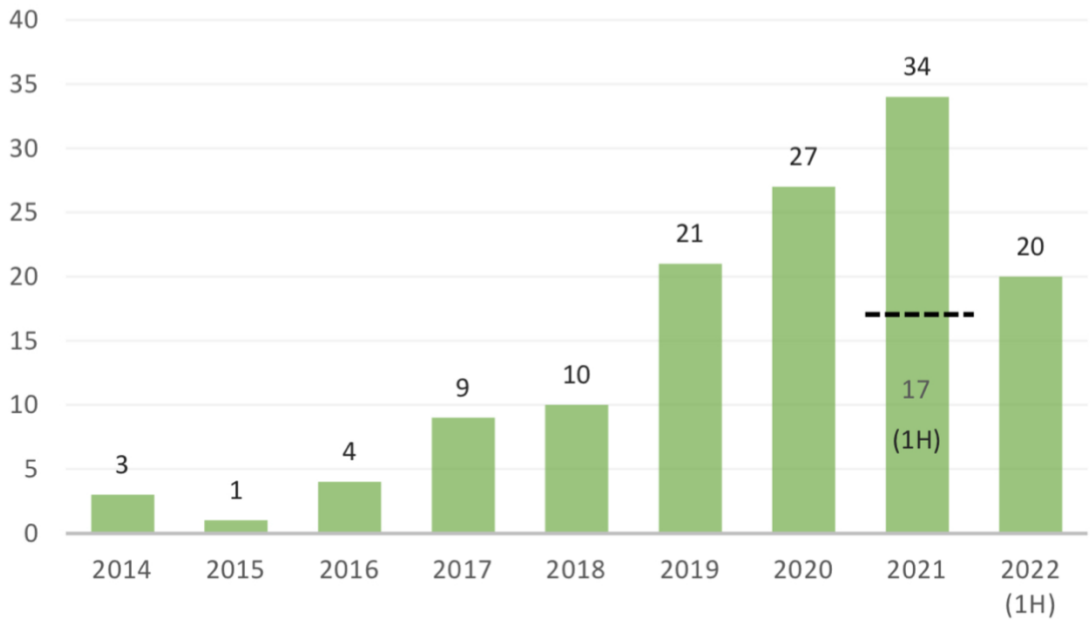
The growing interest in sustainable investments has led financial institutions to integrate sustainability into their investment strategies. Crowdfunding platforms, in particular, are an example of how sustainable finance is evolving. Green crowdfunding has become a key method for financing projects related to sustainability, particularly in the fields of renewable energy, energy efficiency, and waste management. Crowdfunding allows anyone to participate in projects that meet ESG criteria, democratizing access to responsible investments.

These platforms offer small investors the opportunity to contribute to projects that have a positive impact on the planet, without needing to invest large sums of money. At the same time, businesses and startups seeking to promote innovative solutions for sustainability can raise funds from a wide range of supporters.

The growth of the importance of sustainability not only in business practices but also in investment decisions. Sustainable investments, based on ESG criteria, are now seen as a strategic opportunity for the future. Sustainability, integrated into business models and financial instruments, is a key element in addressing global challenges such as climate change and social inequalities.

The increasing spread of green crowdfunding offers a new way to finance projects that promote sustainability, with a positive impact on the environment and society. This form of investment is not only an economic opportunity but also a powerful tool to foster change towards a more sustainable future.

Figure 1.13: Annual flow of sustainable equity crowdfunding campaigns



Source: 7º report italiano sul crowdinvesting, Politecnico di Milano

3.2 Green startup

The growing environmental crisis represents a significant opportunity for green startups, which are capable of developing business solutions that create economic value while addressing and mitigating environmental issues. In other words, the need to solve environmental problems offers fundamental opportunities. Although there is no precise definition of a green startup, a very broad concept, several interpretations have emerged in the literature. This lack of a rigid definition makes it difficult to draw a clear line between a green business and a non-green one. Furthermore, assigning the green status to a startup is often too generic, as it is necessary to distinguish between those offering partially or fully green products or services.

One of the initial definitions describes green startups as companies that "capitalize on significant environmental market failures, turning them into opportunities to achieve profitability while reducing and mitigating negative impacts on the environment." [59] Another definition suggests that they are high-tech startups that use green technologies in their business. Green technologies cover a wide range, including: renewable energy sources, energy storage and distribution, energy efficiency technologies, recycling and waste management, industrial processes with lower environmental impact, soil and groundwater purification, technologies for managing harmful gases, and solutions related to electric vehicles, climate change, and pollution.[60] Another interesting definition is that of environmental product, provided by *Eurostat* [61] , which considers environmental products and services as those that contribute to environmental protection and the management of natural resources, such as the conservation and enhancement of naturally exhaustible resources.

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[59] F. Jensen, H. Lööf, A. Stephan, *New ventures in Cleantevh: Opportunities, capabilities and innovation outcomes.* Business strategy and the Environment, p. 1-16, 2019.

[60] B Mrkajic, S. Murtinu, V. G. Scalera, *Is green the new gold? Venture capital and green entrepreneurship.* Small Business Economics.

[61] Eurostat, *Environmental goods and services sector accounts handbook*, 2016. https://ec.europa.eu/eurostat/documents/3859598/7700432/KS-GQ-16-008-EN-N.pdf/f4965221-2ef0-4926-b3de-28eb4a5faf47.

Another definition is provided by the *US Bureau of Labor Statistics (BLS),* which defines *Green Jobs* as jobs that produce goods or provide services that benefit the environment or conserve natural resources. These jobs also involve tasks where workers are engaged in making production processes more environmentally friendly and using fewer natural resources. According to the BLS, green goods and services fall into five categories:

Renewable energy: electricity, heat, or fuel generated from renewable sources. These energy sources include wind, biomass, geothermal, solar, ocean, hydropower, landfill gas, and municipal solid waste.

Energy efficiency: products and services that improve energy efficiency. This includes equipment, appliances, buildings, and vehicles that are energy-efficient, as well as products and services that enhance the energy efficiency of buildings and optimize energy storage and distribution.

Pollution reduction and removal, greenhouse gas reduction, recycling, and reuse: products and services aimed at reducing or eliminating toxic compounds, removing pollutants or hazardous waste, reducing greenhouse gas emissions, reducing or eliminating the creation of waste materials, and collecting, reusing, regenerating, recycling, or composting waste materials or wastewater.

Conservation of natural resources.

Environmental compliance, education, and public awareness.

Based on these different definitions, we can conclude that a green startup is a type of innovative startup that offers a product or service that, either directly or indirectly, contributes to environmental protection and the conservation of exhaustible natural resources.

3.3 Green crowdfunding

The intersection of crowdfunding and innovative startup has emerged as a pivotal area of entrepreneurial financing, enabling nascent ventures to secure capital while fostering community engagement. Crowdfunding platforms provide a decentralized and democratized means of funding, bridging the gap between innovative ideas and financial backers. Despite the growing body of research on crowdfunding, there is still a critical need to clarify the essential elements of its connection to sustainability.

In the face face of growing global concerns regarding environmental sustainability, green innovation offers a promising pathway toward effective utilization of resource and energy. However, the crucial challenge of insufficient funding often hinders the development of green innovations. Green-oriented ventures normally require large amounts of seed money and face enormous challenges. Fortunately, the emergence of green crowdfunding campaigns has significantly improved the efficiency of raising initial funds and has provided crucial support for innovative green technologies startup. Due to its intrinsic focus on innovation, crowdfunding has proven to be one of the most fertile grounds for the development of sustainable projects.

Scholars argue that crowdfunding can be categorized as reward-based and donation-based crowdfunding. Although the field of crowdfunding research is growing, there is still a notable scarcity of studies that explores the use of reward-based crowdfunding in the development of green products within the academic literature. Green donation-based crowdfunding is a non-profit project with environmental purposes aiming at selling green products and services. In other words, environmental projection-related crowdfunding projects are called *green crowdfunding campaigns*. Even if, it could represent an effective approach for entrepreneurs to obtain external financial support from a large audience, fundraising outcomes are not always a guarantee. Data from Kickstarter, a well-known American crowdfunding platform, show that only 39.73% of campaigns across all categories were funded successfully. Additionally, only 18% of unsuccessful campaigns received 20% of the requested funds or more.

This fertile ground has gained widespread support from investors, who are becoming increasingly aware of environmental issues, both due to growing recognition of their importance and the financial opportunities they present. These two factors are connected in a virtuous cycle: the growing global awareness of the need for sustainability leads to a demand for resources to implement green projects and the necessary transformations, often dictated by institutions. As a result, sustainable investments generate significant value. They represent both the present and the future, as highlighted by the data on ESG funds. Companies, on the contrary, recognize this trend and understand the need to align with it in order to gain a competitive edge in the medium-to-long term and remain attractive to investors.

A 2022 report by the Politecnico di Milano’s Crowdinvesting Observatory highlighted how the growing focus on Environmental, Social, and Governance issues has significantly impacted both the Italian and global financial markets and has particularly led to a boom in green crowdfunding.

Moreover, the concept of “participation” inherent in crowdfunding perfectly aligns with the idea that the planet and society will benefit from the energy transition. Therefore, a sustainable investment is profitable in two ways. This is why many crowdfunding projects focused on sustainability started by concentrating on specific regions and involving local communities, motivating them to act for themselves before doing so for the planet. Italian startups are betting on the Green economy, a growing sector that is increasingly attractive for investment.

The energy transition is creating new investment prospects for small and medium-sized businesses (SMEs), offering them alternative and innovative funding options that go beyond traditional financial institutions to back sustainability-driven initiatives. Crowdfunding as a funding tool for the energy sector is gaining more and more favor. Success stories, such as that of Green Energy Storage on Mamacrowd, and the growing number of energy cooperatives and participatory models for renewable energy investments in Europe, are proof of this.

Despite the availability of widespread financing options, 89% of companies continue to rely on traditional credit sources, often overlooking alternative methods. *Ener2crowd* helps to address this issue by providing easier access to distributed financing for businesses focused on sustainability. This chapter explores how startup can leverage crowdfunding effectively by presenting a detailed case study,, and offering actionable strategic insights. The goal is to highlight both the opportunities and challenges inherent in this financing model.

3.4 Sustainable crowdfunding investors and environmental legitimacy

It is interesting to identify the socio-demographic characteristics of investors focused on sustainability to understand which factors contribute to the success of these initiatives.

Regarding the age group of the individuals involved, since crowdfunding is an online activity, it is reasonable to expect that the supporters of such projects tend to be relatively young[62]. Additionally, literature suggests that younger individuals are more likely to be concerned about environmental issues (Diamantopoulos et al., 2003).[63]

When it comes to education level, another key variable studied by Tenner and Horisch (2021),[64] individuals with higher-than-average education are more likely to invest in sustainability-oriented crowdfunding projects. This has been supported by various studies: for instance, Bretschneider and Leimeister (2017)[65] found that 66% of respondents from a crowdfunding platform survey (Innovestment) had a degree. Similarly, Pierrakis (2019)[66] found that about half of the active crowdfunders in his study had comparable educational qualifications. Furthermore, individuals with higher education levels tend to express more concern for the environment than those with less education.

Regarding gender, several studies have shown that male investors are more drawn to this type of investment. According to Herve et al. (2019)[67] and

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[62] The evidence supporting this first hypothesis also comes from a study conducted by Bretschneider and Leimeister (2017), who reported an average age of 39 years among crowdfunding participants.

[63] Diamantopoulos, A., Schlegelmilch, B.B., Sinkovics, R.R., Bohlen, G.M. *Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation*. Journal of Business Research, 56, (2003), p. 465-480.

[64] Tenner I., Horisch J. *Crowdfunding sustainable entrepreneurship: What are the characteristics of crowdfunding investors?* Journal of Cleaner Production 290 (2021), p. 1-9.

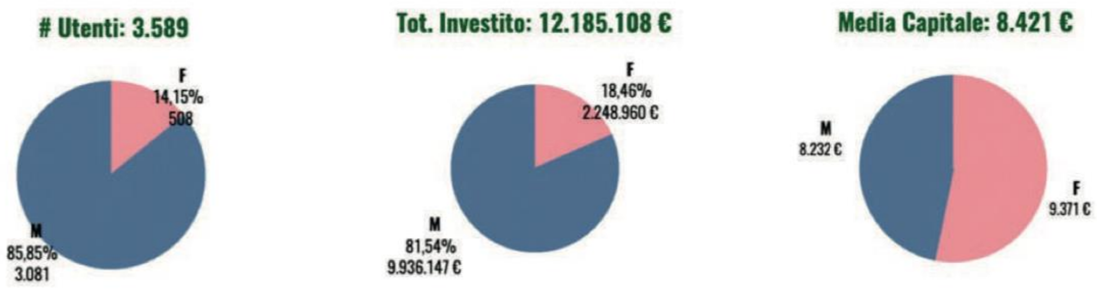
[65] Bretschneider, U., Leimeister, J.M. *Not just an ego-trip: exploring backers' motivation for funding in incentive-based crowdfunding.* The Journal of Strategic Information Systems, 26, (2017), p. 246-260.

[66] Pierrakis, Y. *Peer-to-peer lending to businesses: investors' characteristics, investment criteria and motivation*. The International Journal of Entrepreneurship and Innovation, 20, (2019), p. 239-251.

[67] Herve, F., Manthe, E., Sannajust, A., Schwienbacher, A. *Determinants of individual investment decisions in investment-based crowdfunding.* Jorunal of Business Finance and Account. 46, (2019), p. 762-783.

Mohammadi and Shafi (2018),[68] this disparity arises because men typically demonstrate a higher tolerance for financial risks compared to women. Given that sustainability-focused projects tend to carry more risks and uncertainties than conventional projects, it is expected that risk-averse individuals would avoid such investments. Therefore, while women generally show a higher level of environmental concern (Jones and Dunlap, 1992),[69] it is presumed that male supporters of sustainability-oriented crowdfunding projects are more numerous.

Figure 1.14: Gender analysis



Source: [*https://blog.ener2crowd.com/wp-content/uploads/2023/11/Ener2Crowd_Relazione-di-impatto-2022.pdf*](https://blog.ener2crowd.com/wp-content/uploads/2023/11/Ener2Crowd_Relazione-di-impatto-2022.pdf)

Other important factors include income and education levels, as demonstrated by Tenner and Horisch (2021).[70] Regarding income, the authors identified an inverse relationship between an individual's income and their likelihood to invest in green initiatives. Unlike other types of financial investments, crowdfunding allows participation with smaller amounts of money. As a result, it is an accessible investment opportunity for supporters with lower income levels. In the context of sustainability, this idea is further emphasized by two reasons: first, supporters are primarily

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[68] Mohammadi, A., Shafi, K. *Gender differences in the contribution patterns of equity-crowdfunding investors.* Small Business Economics, 50, (2017), p. 275-287.

[69] Jones, R.E., Dunlap, R.E. *The social bases of environmental concern: have they changed over Time?* Rural Sociology, 57, (2010), p. 28-47.

[70] Tenner I., Horisch J. *Crowdfunding sustainable entrepreneurship: What are the characteristics of crowdfunding investors?* Journal of Cleaner Production 290 (2021), p. 1-9.

motivated by altruistic reasons and a desire for a "*feel-good*" experience, which can also be triggered by small contributions. Second, high-income investors are expected to focus their investments on the stock market or other traditional financial vehicles, while low-income investors are more likely to invest in crowdfunding projects.

According to Chen[71], legitimacy is a crucial factor in the success of crowdfunding campaigns. It refers to the widespread belief that the actions of an entity are seen as desirable, appropriate, or acceptable within a societal framework of norms, values, and beliefs. Entrepreneurs need to convince potential backers of the validity and viability of their projects on crowdfunding platforms, which typically provide little or no preliminary information about the enterprise. The concept of legitimacy has been categorized into different types, including moral, associational, and technological legitimacy.

When it comes to crowdfunding for social enterprises, it has been suggested that investors often focus more on the project's principles and core values, emphasizing its moral legitimacy. This makes crowdfunding a particularly suitable tool for financing businesses that aim to address societal challenges. Environmental legitimacy, in particular, refers to the belief that a company's environmental performance is appropriate and aligned with societal expectations. A company gains legitimacy when its environmental actions meet the expectations of its stakeholders.

Crowdfunding campaigns can enhance legitimacy by fostering early engagement with the public, allowing them to recognize and support the environmental significance of a project. This engagement can also signal the potential for investment to other potential backers. Therefore, by engaging the public early on, crowdfunding can help improve a company's environmental reputation. This enhanced environmental legitimacy may serve as a key motivator for attracting additional investors and ultimately influencing the success of the initiative.

[71] W.D. Chen. *Crowdfunding: different types of legitimacy.* Small Business Economies, 2022.

3.5 Communication for successful campaigns

Recently, entrepreneurship scholars have begun analyzing the role of language in crowdfunding campaigns more directly, focusing on those related to social and sustainability issues. According to linguistic expectation theory (Burgoon et al., 2002; Burgoon and Miller, 1985),[72] it can be argued that entrepreneurs using crowdfunding as a financing tool need to meet the expectations of their target audience when presenting their initiative in order to succeed. These expectations vary among different social groups.

Thus, the expectations for emerging categories like sustainable entrepreneurs are different from those for traditional commercial entrepreneurs, which tend to be more explicit and homogeneous. Consequently, the expectations faced by commercial entrepreneurs can be managed more easily through various signals related to products, entrepreneurs, and companies. On the other hand, entrepreneurs in emerging sectors (like sustainable or social entrepreneurship) need to address the ambiguity surrounding these expectations by relying on communication tools. The effectiveness of these tools does not lie in predicting the projected expectations of their audience, but in allowing entrepreneurs to meet their goals by adopting linguistic styles that make their campaigns more comprehensible to the audience and establish a personal connection with the "*crowd*" (Parhankangas and Renko, 2017).[73]

Appropriate use of language can help entrepreneurs convey a solid and understandable entrepreneurial identity to the public. In this context, it is clear that the construction of entrepreneurial identity is influenced not only by "*market structures*" but also by the characteristics of products and services designed to attract potential consumers or users. This suggests that when entrepreneurs target a more "mixed" audience to mobilize support for their idea, such as potential customers who might also become sponsors or shareholders, they are likely to "create value" in multiple and holistic ways rather than simply catering to specific stakeholder expectations. Communication in this context can be seen as multifaceted, as it needs to combine various elements to ensure the success of the initiative. It should

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[72] Burgoon, M., Miller, G.R. *An Expectancy Interpretation of Language and Persuasion. Recent Advances in Language, Communication and Social Psychology.* Lawrence Erlbaum Associates Ltd., London, UK, (1985), p. 199-229.

[73] Parhankangas A., Renko M. L*inguistic style and crowdfunding success among social and commercial entrepreneurs.* Journal of Business Venturing 32 (2017), p. 215-236.

make the promoter's goals known and appreciated, while ensuring that this message is clearly understood by the funders.

Thus, crowdfunding campaign presentations serve as an important link, acting as an interface between evolving projects and various stakeholders. Unlike traditional presentations to experts and venture capitalists, crowdfunding campaigns target a much more diverse group of supporters, providing entrepreneurs with an opportunity to convey a coherent and condensed project identity. In other words, the way in which the project is presented can be seen as a "strategic moment" where entrepreneurs can substantially influence the audience's perception of the initiative (Manning and Bejarano, 2017).[74]

For sustainable initiatives, entrepreneurs must convey their potential, explain what motivated them to embark on the project, and communicate the genuine commitment behind any initiative of this type, which goes beyond mere financial returns. In this context, social and psychological factors may be as important, or even more important, than strictly financial returns. The narrative can play a significant role in successful crowdfunding campaigns by establishing a compelling investment story.

For instance, it has been found that the narratives of social entrepreneurs dealing with local issues, collective action, geographic communities, and local power struggles (Parkinson and Howorth, 2008)[75] differ from those told by commercial entrepreneurs in terms of worldview, the extent of stakeholder relationships, psychological stress on actors, and thinking styles.

Effective communication is central to crowdfunding success because funding decisions are often based on very limited information, such as a short video clip that typically lasts only a few minutes. Therefore, language becomes an additional critical element for the success of sustainability-oriented initiatives.

However, for this to happen, entrepreneurs must use a linguistic style that allows them to engage with the crowd. The presentation must be clear and concrete to establish a personal connection with the audience. This requires the use of styles that are low in psychological distance but high in

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[74] Manning, S., Bejarano, T.A. *Convincing the crowd: entrepreneurial storytelling in crowdfunding campaigns*. Strategic Organization, 15: 2 (2016), p. 194-219.

[75] Parkinson, C., Howorth, C. *The language of social entrepreneurs*. Entrepreneurship & Regional Development 20:3, (2008), p. 285-309.

interactivity. Even though, in the case of equity crowdfunding, especially for sustainable projects, the amount invested by funders is generally low, it is still important to provide concrete and precise information and build a personal relationship with the supporters by sharing personal experiences and using a highly participatory style, aiming to engage the recipients through questions, opinions, and thoughts rather than passive statements.

As highlighted, emotional appeal and interaction with the audience play a significant role in narratives. However, the challenge lies in communicating with a concrete and precise language. Entrepreneurs, particularly in the early stages, find it difficult to clearly communicate the social impact they are trying to achieve and provide specific details about situations, objects, and people. Similarly, they need to describe their personal experiences, the goals related to their campaigns, all while using a language that allows them to interact with their audience by posing questions.

Another crucial factor in any crowdfunding proposal is the video pitch, where entrepreneurs present the project to be funded. These videos are an example of the current entrepreneurial scene, where early-stage entrepreneurs are increasingly involved in the theatrical presentation of their projects to various audiences in forums such as accelerator demo days, pitch mixers, competitions, and online crowdfunding sites. Therefore, even in verbal communication, it is vital for promoters to convey the intrinsic meaning of their initiative in just a few words.

Additionally, it is important to contextualize the study of entrepreneurial communication not only in its immediate empirical context, i.e., the influence of online communication on the crowdfunding site hosting the campaign, but also within the broader social context, where the "crowd" evaluates the persuasiveness of the entrepreneur's communication. This is where the study by Laurell et al. (2019)[76] comes in, which sought to explain how sustainability dimensions, in reference to crowdfunding, are publicly addressed, specifically via social media. Based on the analysis of 141,754 user-generated contents related to crowdfunding, only 0.21% (308) of these contents explicitly or implicitly mention aspects of sustainability. The authors observed that sustainability-oriented campaigns and related discussions currently receive limited attention in social media contexts. More specifically, traditional media have shown less interest and are more focused on elaborating the social consequences of new phenomena and

[76] Laurell C., Christian Sandström C., Suseno Y. *Assessing the interplay between crowdfunding and sustainability in social media.* Technological Forecasting & Social Change 141 (2019), p. 117-127.

innovations, while social media tend to concentrate more on the values and attributes of a new phenomenon or innovation. In light of these differences, crowdfunding can be considered relatively well aligned with social media due to the significant amount of content generated by users. However, only 0.21% of all the crowdfunding-related content on social media pertains to sustainability, indicating that entrepreneurs in the social and sustainability space, who have economic, environmental, and social goals, struggle to secure a place in the public discourse on crowdfunding within social media.

This difficulty can potentially be linked to two reasons. First, sustainable entrepreneurs are associated with higher ambiguity and complexity, especially when measuring the return on their entrepreneurial projects. In a scenario where social media users are also exposed to commercial initiatives, which are more clearly articulated in terms of expected financial return, these individuals may consider these projects more precise regarding the specific values and attributes they aim to provide. Second, the target market for social and sustainable entrepreneurs might not necessarily be large, unlike commercial entrepreneurs. Therefore, the initiatives of social and sustainable entrepreneurs may not aim to create significant engagement with large groups of social media users across platforms, but rather focus on reaching specific segments of individuals who typically represent sustainable investors.

In conclusion, the actions of sustainable entrepreneurs on social media might, due to the simplistic nature of social media, be better aligned with traditional media, which devote more attention to discussing the social consequences of changes and innovations, although they are less interested in the changes and innovations themselves.

3.6 Ener2crowd: the crowd investing platform dedicated to sustainable projects

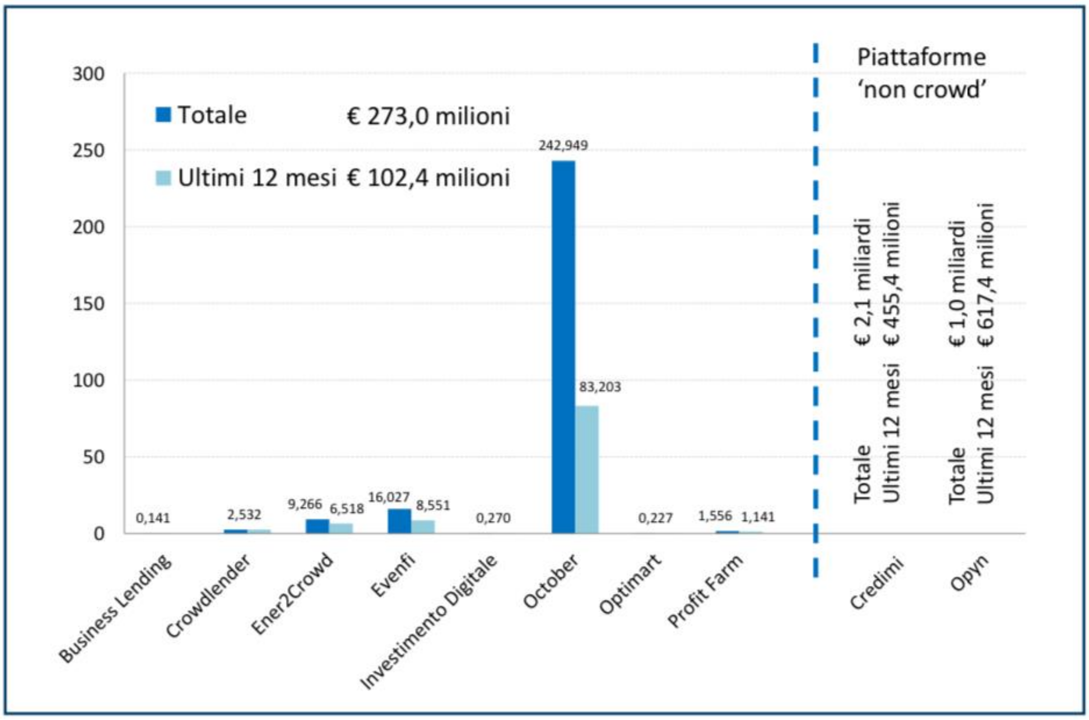
In Italy, business lending platforms are categorized into real estate and non-real estate platforms. Based on this classification, there are 12 main players in the market: Business Lending, Credimi, Crowdlender, Ener2Crowd, Eventi, Investimento Digitale, Longevy, October, Optimart, Opyn, Profit Farm, and The Art Finance. Between 2021 and 2022, there was an increase of 4 new players in the sector. Most of these platforms are of Italian origin, except for October, which is French but also operates in Italy. The table below lists the companies managing these platforms and their respective qualifications.

Figure: 1.15: The Italian lending crowdfunding platforms active as of June 30, 2022, in lending to businesses for non-real estate projects.

Sito *web*	Società gestore	Qualifica	*Focus*
Businesslending.it	Europay Srl	Agente istituto di pagamento	-
Credimi.com (*)	Credimi SpA	Intermediario fin. ex art. 106 TUB	-
Crowdlender.it	Opstart Srl	Agente istituto di pagamento	-
Ener2crowd.com	Ener2crowd Srl / Lemon Way SA	Agente istituto di pagamento	Energia
Evenfi.com	Criptalia Srl	Agente istituto di moneta elettronica	-
Investimentodigitale.it	Investimento digitale Srl	Agente istituto di pagamento	-
It.october.eu	October Italia srl / October SA	Agente istituto di pagamento	-
Longevy.finance	Longecy Finance SpA SB	Agente istituto di pagamento	Salute
Optimart.it	Optimart Srl	Agente istituto di pagamento	Arte
Opyn (*)	Business Innovation Lab SpA / Mo.Net SpA / Art SGR SpA	Istituto di pagamento / Società di Gestione del Risparmio	-
Profitfarm.it	Profit Farm Srl	Agente istituto di pagamento	Crediti
Theartfinance.com	The Art Finance SpA SB	Agente istituto di pagamento	Cultura

Source: 7° report italiano sul crowdinvesting, Politecnico di Milano

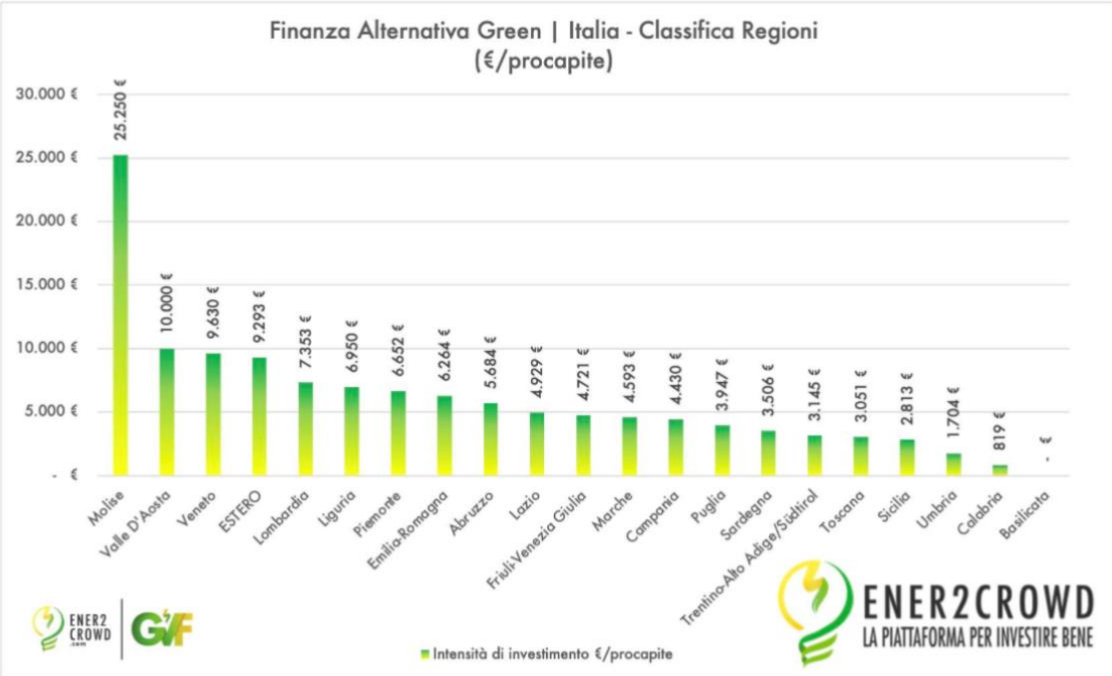
Figure 1.16: Amount of loans disbursed by lending crowdfunding platforms active in the non-real estate business sector as of June 30, 2022. Total values and annual flow in millions of euros.



Source: 7º report italiano sul crowdinvesting, Politecnico di Milano

In third place is Ener2Crowd, a platform specialized in green projects and sustainable investments, including renewable energy production, industrial and residential energy efficiency, sustainable mobility, and projects with social impact. As of June 30, 2022, the total amount disbursed was €9.3 million, of which €6.5 million was raised in the last six months, funding 34 projects.

Figure 1.17: Alternative green finance in Italy – Regions classification



Source: https://blog.ener2crowd.com/investire-in-modo-sostenibile-con-lequity-crowdfunding/

Ener2Crowd is the only platform that monitors and transparently reports the impacts related to investments. It has created a ranking of Italian regions based on the distribution of capital dedicated to projects for a sustainable future. Leading the list in terms of capex spending (capital expenditure) is Lombardy with 36.33%, followed by Veneto with 14.56%, Emilia-Romagna with 11.09%, and Piedmont with 8.83%, showing a clear dominance from Northern Italy. In the Central region, Lazio ranks 5th with 5.73%**.** Positive signals also come from Campania and Sicily, where the latter attracted the attention of major utilities, which tested new community involvement models, such as agrivoltaic systems.

However, when looking at per capita investments, the residents of Northern Italy and international investors remain the most engaged, with approximately €7,000–€10,000 per person. Following are Liguria with 3.08%, Tuscany with 2.81%, which stands out for having a high number of participants relative to the volume of investments, making it the region with the largest grassroots participation. Further down the list are Campania (2.45%), Sicily (2.28%), Friuli-Venezia Giulia

(1.83%), Marche (1.52%), Abruzzo (1.47%), and Apulia (1.09%). The remaining regions in Italy have less than 1% participation.

Ener2Crowd is a crowdinvesting platform dedicated solely to sustainable projects. This Italian startup is transforming climate remediation into an opportunity for many through its crowdinvesting platform. The company focuses on turning environmental challenges into opportunities for economic growth and social progress. With its platform, Ener2Crowd enables investments in eco-friendly projects. To date, over 140 projects have been funded, amounting to more than 31 million euros, leading to a reduction of 127,000 tons of CO2 emissions. The goal is to address environmental challenges while fostering economic growth and social progress through climate remediation, transparency, and the democratization of green investments.

Ener2Crowd actively promotes the realization of sustainable investments aligned with the decarbonization goals of the countries in which it operates, and more broadly with the commitments established by the 2015 Paris Agreement and its subsequent updates. Its business model, based on the lending crowdfunding methodology, allows all stakeholders to actively participate in promoting and funding such projects, effectively making them key players in the fight against climate change and significant advocates of sustainable energy transition initiatives. In its transformation process into a benefit corporation, Ener2Crowd has set a series of goals regarding businesses, communities, the third sector, and the environment, in line with the United Nations SDGs, which it intends to pursue, monitor, and publicly share every year.

The advantage of this model is that it brings investors closer to the value that investments can create for the communities in which they live. The platform allows for the financing of projects within Italy, engaging investors in the process of transitioning to a sustainable energy system and making them active participants and sometimes direct witnesses of the concrete changes taking place in their area. One example of this is the financing of the solar park in Augusta, Sicily, which includes ground-mounted solar plants with photovoltaic modules on sun-tracking structures. This park is owned by Enel Green Power S.p.a., which chose to finance the project in line with its objectives to create social and environmental value for the local community, involving citizens directly in the implementation of clean energy plants. The residents of Augusta, as an incentive, received interest rates higher than those offered to non-local investors. The citizens who contributed financially to this initiative will also be the main beneficiaries of the social and environmental benefits derived from the development of renewable energy sources. Another initiative, tied to this, for engaging investors in the fight against climate change, is the creation of the Bosco dell’Energia. For every investment of €50 on Ener2Crowd, a tree is planted thanks to the partnership with Tree-Nation. This small, concrete action allows users to participate in causes such as CO2 reduction and the fight against deforestation, global issues that impact health and quality of life but rarely give individuals the chance to act. In 2021, Ener2Crowd transitioned to a *Benefit Corporation*, a type of company that requires its management and shareholders to adhere to higher standards in terms of purpose (positive impacts on society and the biosphere), responsibility (considering the company's impact to create sustainable long-term value), and transparency (annually reporting achievements, progress, and future commitments according to third-party standards).

Figure 1.18: Ener2Crowd’s objectives

Source: https://blog.ener2crowd.com/wp-content/uploads/2023/11/Ener2Crowd_Relazione-di-impatto-2022.pdf

3.6.1 *Target audience of Ener2Crowd: proponents and investors*

Founded with the aim of making financing accessible for sustainable projects, Ener2Crowd now allows both private and institutional investors to participate in the energy transition, tackling climate change through climate remediation, efforts to clean, treat, or contain pollution. The company became a benefit corporation in 2021, which means it integrates environmental and social objectives into its mission.

The four primary areas of focus are:

- Social impact reforestation that supports local communities.
- Financial literacy initiatives that promote sustainable business practices, especially among young people.
- Cultural and awareness projects to educate the public on climate change solutions.
- Responsible consumption that rewards investors choosing products with high positive impacts.

Regarding *proponents*, it could be any company that has or wants to develop a green project capable of generating significant environmental and social benefits can propose a project for financing via crowdfunding through Ener2Crowd. This is not only an alternative financing tool but also a means to gather consensus and involve the people and communities who will benefit from the proposed projects. Potential proponents may include:

- Small and Medium Enterprises (SMEs) and large companies
- Public entities
- Utilities
- Energy Service Companies (ESCOs)
- Technology providers
- Project developers
- Investment funds

Concerning *investors*, they could be private individuals. According to analyses conducted by Ener2Crowd's internal teams, the "*GreenVestor*" is an ethical, conscious, and responsible investor who can be categorized into four main profiles.

Financial Balancer: A man aged between 45 and 65, a high-level professional with a prestigious degree and an above-average monthly salary. He has an investment capacity in crowdfunding ranging from €4,000 to €8,000 per year, with a well-diversified portfolio. His goal is to grow capital, diversify investments, and access opportunities with lower risk and medium-term rewards.

Radical Sustainable: A woman aged between 25 and 55, a young professional, often balancing a career and family life, with an annual investment capacity in energy crowdfunding of around €6,000. She mostly lives in urban areas, with a strong commitment to environmental issues. She is guided in her purchases and daily choices by a keen attention to eco-friendly brands and low-impact packaging. She uses her capital to consume responsibly and contribute to a better environment.

Fintech Enthusiast: Predominantly men but also women, aged between 18 and 45, with an investment capacity in crowdfunding ranging from €1,500 to €3,000 per year. Passionate about new technologies, they shop online and watch streaming content. They view energy crowdfunding as a tool to produce a positive and lasting impact on the environment, while also providing an immediate economic benefit.

Committed Saver: Men and women between 45 and 65 years old, with stable employment that allows them to plan savings, with a higher investment capacity, around €7,000 per year, expecting returns in the short and medium term. They prefer to allocate their capital to investments in the real economy, using the interest earned for other daily expenses.

3.6.2 Evaluation of projects and their impact

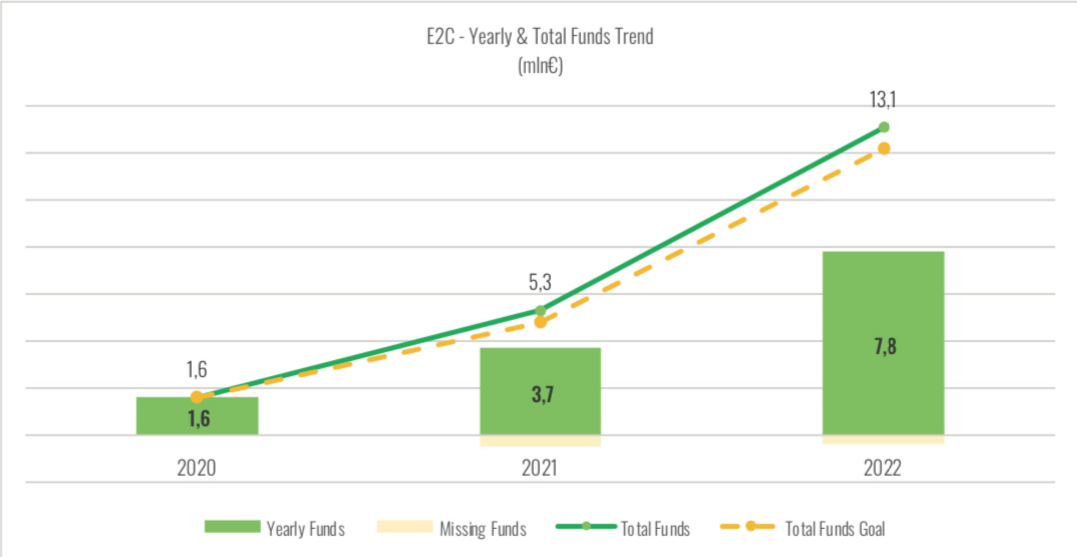
Ener2Crowd has raised significant funds, financing over 140 projects and securing more than 31 million euros, preventing the release of over 127,000 tons of CO_2 throughout the life of these projects, proving its effectiveness in driving climate remediation.

The platform's main goal is to reduce CO_2 emissions and promote renewable energy usage, while generating economic returns for investors. There are two primary modes of investment: *lending crowdfunding*, where investors lend money to fund green projects and receive interest, as well as *equity crowdinvesting*, where investors become shareholders in supported companies, gaining both financial and administrative rights. Ener2Crowd also advocates for inclusive finance by offering a wide range of investment opportunities that contribute to certified ESG projects. Each project is selected for its positive environmental impact.

Investors can track the environmental impact of their investments using sustainability indicators, such as the *Sustainable Investment Intensity (SII)*, which measures the amount of CO_2 avoided per euro invested. This indicator makes it easy to compare projects and understand their environmental effects. Additionally, Ener2Crowd is authorized and regulated by Consob and the Bank of Italy, ensuring safety and reliability. The registration and investment process is simple: users open a digital wallet, load it, and select from available projects.

Figure 1.19: Sustainable fund raising

Year	Yearly Funds mln€	Yearly Funds Goal mln€	Missing Funds mln€	Total Funds mln€	Total Funds Goal mln€	Yearly Fund Growth %	Total Funds Growth %
2020	1,6	1,6		1,6	1,6		
2021	3,7	3,2	-0,5	5,3	4,8	131%	231%
2022	7,8	7,4	-0,4	13,1	12,2	111%	147%



Source: https://blog.ener2crowd.com/wp-content/uploads/2023/11/Ener2Crowd_Relazione-di-impatto-2022.pdf

In 2022, Ener2Crowd raised a total of €7.8 million to fund 32 projects, with an average collection of around €249,000 per project. This achievement exceeded the fundraising targets for the second consecutive year, confirming triple-digit annual and total growth (+111% annual fundraising, +147% total fundraising), with a Compound Annual Growth Rate (CAGR) of 186%. The total amount raised by Ener2Crowd in 2022 represented approximately 7% of the total within the P2P Business Crowdlending segment (or Crowdinvesting, excluding the real estate sector), accounting for about 3% of the total crowdfunding raised in Italy (€397 million), including "retail investors" (including the real estate segment, but excluding activities primarily managed by institutional investors through crowdinvesting platforms).

In 2024, Ener2Crowd became the leading platform in Italy for the amount of funding provided to companies outside the real estate sector, with about 11 million euros invested and an average return rate approaching 8% annually.

The average investment duration has increased to 2.8 years, allowing for lasting impacts, while offering investors optimal returns.

A cornerstone of Ener2Crowd's success is its community of ethical investors, the so-called "*GreenVestors*," who actively participate in events organized by the company. The ecological profitability is one of the tangible benefits. Every ton of CO2 avoided generates an economic benefit of 184 euros per year for investors, an impressive return that makes a significant difference, especially for the future of our planet.

It is interesting to note how the monthly fundraising volumes are directly proportional to the number of new members registering on the platform each month. The new investors who became progressively more active have significantly contributed to the growth and achievement of the set goals, becoming a vital force for the community. Part of this momentum is attributed to the community engagement activities promoted by Ener2Crowd, both by major industry utilities (such as Enel Green Power**,** EDP Renewables**,** Flack Renewables) and smaller companies that have understood the importance of leaving a positive mark of their work in local areas, going beyond the more immediate and mandatory compensation policies, typically confined to small social dimensions or beyond their operational responsibilities.

As it is an investment, risk is always present, but for Ener2Crowd, the situation is different. The platform aims to provide more security and ethics to investors, promoting a win-win approach. Unique in the landscape of crowd-investing platforms, Ener2Crowd uses the *EnerScore*, a synthetic and immediate indicator that shows the investment's risk level. The EnerScore is determined through a three-level analysis process, assigning a score to each project (ranging from 3.2 to 10), which corresponds to a global scoring (A+, A, B+, B, C). Based on this score, the investor is offered a different rate of return: higher for higher-risk projects and lower for safer ones.

Figure 1.20: EnerScore

RATING GLOBALE	Range Punteggio DA	A	Tasso di rendimento suggerito	RATING ASSEGNATO
A+	8,7	10,0	3 - 4%	
A	7,4	8,6	4 - 5%	
B+	6,0	7,3	5 - 6%	RATING B+
B	4,6	5,9	6 - 7%	
C	3,1	4,5	7 - 8%	

Costruzione del rating	Peso	Rating parziali
RATING ANALISI TECNICA	30%	★★
RATING ANALISI CREDITIZIA	60%	★
RATING STORICITA' E MANAGEMENT AZIENDALE	10%	★★

Source: https://www.ener2crowd.com/it/enerscore

The EnerScore results from three distinct analyses, each producing a partial score weighted accordingly. The three analyses include:

Credit Analysis: It assesses the financial reliability of the borrower, acting as the first "gate" to pass before moving forward. It includes an initial evaluation followed by an in-depth analysis, supported by an external and impartial company like EasyFintech. This analysis has a 60% weight in the EnerScore calculation.

Technical-Economic Analysis: Conducted by industry experts, it validates the environmental, energy, and economic performance data. Its goal is to ensure that the debt incurred is sustainable concerning the project's revenues, ROI, and cash flows. This analysis accounts for 30% of the EnerScore calculation and is crucial for the quality of proposed projects.

Company Track Record: This analysis is done through an interview with the proponent and based on the request for a track record of past projects. The experience of the proposing company in the sector and in developing such projects is an essential factor. This analysis contributes 10% to the EnerScore and helps assess whether the company is experienced and stable in the market.

These three analyses help reduce and easily understand the investment risk, improving transparency and clarity—essential characteristics for making informed decisions on where and how to invest savings. In a world where risk is unavoidable, the EnerScore offers a clear method to minimize it, making the investment process more transparent, even in the green sector.

3.7 Challenges and limitations of green crowdfunding

While green crowdfunding presents a significant opportunity for overcoming financing barriers in corporate green innovation, it also faces several challenges that can hinder its widespread adoption. Understanding these challenges is crucial for both businesses and policymakers who aim to use these tools effectively.

Regulatory Uncertainty: One of the main obstacles to crowdfunding is the lack of clear regulatory frameworks for digital financing tools. Crowdfunding platforms, peer-to-peer lending, and digital green bonds often operate in emerging markets where regulations are still in development. Many countries lack comprehensive legal structures for crowdfunding, particularly in sustainable finance, which presents risks for both businesses and investors. The regulatory uncertainty around digital currencies, investor protections, and the use of blockchain for financial transactions creates a complex environment. In the absence of a unified regulatory framework, businesses face legal challenges, and investors may hesitate to engage in green financing projects. Moreover, inconsistent regulations across different regions complicate the global expansion of crowdfunding platforms, limiting their ability to effectively fund green innovation initiatives.

Investor Confidence and Awareness: A significant barrier to the widespread use of crowdfunding in green innovation is the lack of investor awareness and confidence in digital financial tools. Although sustainable investing is gaining traction, many investors are still unfamiliar with crowdfunding platforms, especially those focused on green initiatives. This lack of familiarity often results in these platforms struggling to raise sufficient capital for green innovation projects. There is also a perception that crowdfunding may carry more risk compared to traditional financial institutions, especially in relation to newer technologies like blockchain or cryptocurrency. Given the high-risk nature of many green innovation projects, this uncertainty surrounding the effectiveness of crowdfunding tools may deter potential investors. To overcome this barrier, crowdfunding platforms must build trust by ensuring transparency, strong governance practices, and clear communication about the positive impact of their green finance efforts.

Scalability Issues: While crowdfunding has proven effective for small and medium-sized enterprises (SMEs) in the green sector, its scalability remains a challenge. Green innovation projects are often large-scale, capital-intensive endeavors that require substantial funding over extended periods. Crowdfunding platforms and peer-to-peer lending can provide initial funding, but they may not be equipped to meet the financing needs of larger corporations or multinational projects. The ability of crowdfunding solutions to scale and support large, high-capital green projects is still being tested. Additionally, the rapid growth of the crowdfunding industry could result in market fragmentation, where numerous competing platforms emerge, each offering different services and models. This fragmentation could confuse investors and hinder the broader adoption of crowdfunding as a solution for funding green innovation.

Technology Infrastructure Limitations: In many developing regions, the necessary technology infrastructure for crowdfunding platforms may be insufficient. Digital crowdfunding platforms rely on stable internet connectivity, secure payment systems, and accessible technology, all of which may be lacking in some areas. Without adequate infrastructure, crowdfunding initiatives may struggle to gain traction in these regions, limiting their ability to support green innovation projects. Furthermore, the complexity of certain digital tools, such as blockchain-based platforms or digital green bonds, may require technical expertise that is not readily available in all markets. Both businesses and investors may face difficulties understanding and adopting these advanced technologies, which could slow down the development of crowdfunding solutions for green innovation.

CONCLUSIONS

The rapid evolution of crowdfunding, particularly in the realm of green and sustainable projects, presents a promising opportunity to address the growing challenges of environmental sustainability. This thesis has explored the potential of crowdfunding platforms, such as Ener2Crowd, in financing energy transition projects, their impact on local communities, and their contribution to the global decarbonization efforts outlined by the Paris Agreement. The research has highlighted the innovative business models emerging in this space, especially those that blend financing with community engagement and direct environmental impact.

However, despite the success and increasing adoption of green crowdfunding solutions, several challenges and limitations persist. Regulatory uncertainty remains a key hurdle, with countries still working to establish clear frameworks for crowdfunding operations, particularly in the context of sustainable finance. This ambiguity can deter investors and slow the growth of crowdfunding platforms targeting green projects. Furthermore, investor confidence is still relatively low, with many potential backers unfamiliar with these new financing methods or skeptical about the associated risks, especially when dealing with high-risk, untested technologies like blockchain or digital green bonds.

Scalability is another challenge for crowdfunding in the green innovation sector. While crowdfunding has proven effective for smaller projects, it faces limitations when applied to large-scale, capital-intensive initiatives. The ability of crowdfunding platforms to handle these larger, more complex projects is still being tested, and their capacity to compete with traditional financial institutions and venture capital remains uncertain.

Additionally, technology infrastructure limitations in developing economies pose significant barriers to the widespread adoption of crowdfunding solutions. In regions where digital infrastructure is underdeveloped, it becomes challenging to gain traction, limiting the ability of crowdfunding platforms to support green innovation.

Despite these challenges, there are promising avenues for future research and development. Further exploration of how crowdfunding platforms can overcome regulatory hurdles and investor apprehension will be crucial in making green crowdfunding a viable long-term financing tool. Additionally, refining the scalability of crowdfunding platforms to support larger and more diverse green projects is a critical area for improvement. As technology continues to evolve, the potential for crowdfunding to drive innovation in the green sector only grows.

In conclusion, while there are limitations to be addressed, the continued growth of crowdfunding platforms, particularly those focused on green innovation, has the potential to significantly impact the global push towards sustainability. With the right policy support, technological advancements, and increased investor awareness, crowdfunding could become a fundamental tool in the fight against climate change.

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