UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

DIPARTIMENTO DI ECONOMIA,
MANAGEMENT, ISTITUZIONI

CORSO DI DOTTORATO IN MANAGEMENT
XXXIII CICLO

Start up ecosystem: Features, processes, and actors.

Coordinatore:
Ch.ma Prof.ssa

Cristina Mele

Candidato:
Fabio Greco

Relatore:
Ch.ma Prof.ssa
Cristina Mele

ANNO ACCADEMICO 2019/2020

Start up ecosystem: Features, processes, and actors.

Contents:

Chapter 3 Support factors: Start-up accelerators and incubators

Chapter 4 Institutions in the start-up ecosystem: Universities and early entrepreneurship

Chapter 5 New technologies as a lever of start-ups scalability

Chapter 6 Case study: a comparison between Rome and Naples and a first Benchmarking analysis with Silicon Valley

Abstract

Successful start-ups can positively contribute to the well-being of countries' economies by creating jobs and new investment opportunities.

The success of start-ups strongly depends on the ecosystem in which they are inserted.

In this regard, it is important to understand the concept of the start-up ecosystem, in particular from the point of view of researchers and professionals.

The desire to deepen the dimensions and components of the ecosystem and to observe more closely the best start-up-friendly ecosystems, then propose a comparison with the Italian context, is derived from evidence indicating that the most successful start-ups are concentrated mainly in certain areas of the world, and this concentration is by no means accidental. In fact, the presence of cities and districts recognized worldwide as real technological hubs appears to be directly connected to the presence of a series of conditions that are extremely favorable to their development.

From this reasoning, the concept of "ecosystem," which we defined in the course of the work as a "set of conditions, actors and infrastructures capable of supporting the birth and development of innovative business projects; an absolutely heterogeneous system of elements, which embraces culture, regulatory and fiscal measures, public administration, financiers, businesses, universities and research centers."

To better describe the phenomenon of start-up ecosystems and analyze the main components that characterize the latter, especially in relation to the geographical contexts in which they develop, we have chosen to start from a model that presents five essential components of start-up ecosystems: entrepreneurship with a particular focus on the diffusion of start-up companies; business incubators and accelerators; institutions (and in particular universities); and the possibility of accessing technologies as a lever for achieving the main objectives of start-ups.

The work presents a qualitative research methodology on different levels of analysis.

The process research is aimed at multiple case studies in which we first present a comparison between the start-up ecosystems of Rome and Naples and then conciliate with a first benchmarking with a context considered to be of excellence (despite the limitations it presents in recent times), i.e., that of Silicon Valley.

The case studies were enriched by the results of narrative interviews of the main actors of the start-up ecosystem: start-uppers, directors of incubators and start-up accelerators and university professors engaged in the issues of new entrepreneurship.

Chapter 1 **Research design.**

Start up ecosystem in the literature.

1.1 Overview of the study.

The launch and dissemination of a plurality of initiatives aimed at encouraging and facilitating the birth and development of new innovative entrepreneurial activities have constituted a significant trend in the economies of several industrialized countries for over 20 years and have shown special vigor in recent years.

The spread of the phenomenon, in Italy and the world, has brought increased interest to the phenomenon, not only from those who want to be entrepreneurs but also from the different actors of the international entrepreneurial ecosystems.

Start-ups are growing by exploiting disruptive ideas and recent digital technologies. Startups in Europe have created approximately 18,000 jobs. The sectors in which European startups are active are mainly IT / Software Development (19.1%) and Software-as-a-Service (18.5%). New sectors that are registering more startups are Green Technologies (4%) and FinTech (5.1%). An interesting fact is that most startups (82.1%) in Europe operate in business-to-business (B2B) markets and generate their turnover entirely (46.5%) or mainly (25.3%) by working with other companies more than with the final market (European Commission, 2020).

There are 1,217 incubators and accelerators for startup companies in Europe and they employ 7,165 workers. A relevant figure emerges in the EU report on the percentage of equity held by incubators and accelerators in the organizations they incubate: 17.5% of the incubators and accelerators in Europe have shares in the incubated organizations.

The most popular services that these organizations offer are networking services, the provision of physical spaces and shared services, and access to finance, training, and

managerial support (EconomyUp, 2020).

In the United States, the situation and trends are similar, with numbers on a much larger scale. There, startups have grown at an average of 40% year-on-year in the last 5 years. No other rich world country is experiencing the same rise in entrepreneurship.

Venture capital investors sank $946 million across 54 deals in the Pacific Northwest during the fourth quarter, according to GeekWire's tally, derived from our running list of Pacific Northwest startup investments. That follows $1.1 billion raised in the third quarter and a strong first half of 2020 for Seattle and the broader Pacific Northwest startup ecosystem.

Funding totals from 2020 as a whole for the region came in at $4.4 billion, up 15% year-over-year (The Economist, 2020).

Startups have features that set them apart from other companies; for instance, their growth rate is above the average of other firms. Often, this depends on successful mentorship; indeed, mentored startups have quicker growth and a seven-times-higher funding amount than other startups (Forbes, 2019).

If the statement that start-ups are human institutions designed to create new products and services in conditions of extreme uncertainty is true (Blank and Dorf, 2013), then it is equally true that these realities are not the small version of traditional businesses. Start-ups require very different rules, paths, skills, and tools.

These initiatives bring out a necessary joint effort by a plurality of actors, such as institutions, the state, universities, research centers, venture capitalists, and business incubators (Gibson and Smilor, 1991).

Therefore, the entrepreneur, as a central subject in the start-up of new businesses, is no longer alone but flanked by other actors able to facilitate and stimulate the birth of companies in the most varied and innovative forms.

This new complex and dynamic entrepreneurial scenario in which start-up companies flourish has led scholars to investigate it in more depth in recent years, giving rise to a new study topic that takes the name of "start-up ecosystem."

Startups play a very important role in spreading the innovation-oriented entrepreneurial culture. The figure of the entrepreneur becomes the engine of development, as through the introduction into the market of innovative products and services, they improve society and increase competitiveness and production.
Business accelerators and incubators have given a strong push and positioned themselves as the main actors in ecosystems because they play a key role in supporting and guiding newly born economic organizations that do not have sufficient means and capital to face their critical start-up phases.
The institutions also play a very important role and, in particular, universities allow for the transfer and exchange of essential skills

All of this was strongly encouraged by the digital revolution and, therefore, by new technologies often forged within start-up companies.

For this series of reasons, we will focus on the "startup ecosystem," seen as a particular economic system in which a set of actors collaborates to create a support system for entrepreneurs, giving them better and faster access to services, knowledge, and resources.

1.2 Purpose of the study and research question.

The preliminary study on start-up ecosystems, prior to the drafting of this doctoral thesis, allowed us to identify some gaps in the studies that preceded us.

The first gap concerns the fact that even the most recent studies discount the fact that for many years the reference literature has considered the phenomenon of the birth of new innovative businesses as a simple and small component in the broader sphere and phenomenon of entrepreneurship.

The second gap concerns scholars' underestimation of the theme of start-up ecosystems, associating it too often with that of innovation ecosystems. In this way, the most important difference between the two types of ecosystems mentioned above—namely, "entrepreneurship"—has been neglected. In fact, both ecosystems present the content of technology and innovation but innovative ecosystems are not

necessarily linked to the variables and dimensions of entrepreneurship as much as start-up ecosystems are. Finally, a third gap was analyzed. The literature of the past has often treated start-up ecosystems in the same way as the phenomenon of business incubators and accelerators. However, through this study, we are discovering that start-up ecosystems are very complex and articulated ecosystems of which business incubators, while of strategic importance, are only a single part.

The gap analysis makes it clear that the literature prior to these studies certainly focused on the description of start-up ecosystems as an emerging phenomenon but paid little attention to identifying the specific components, actors, and processes that, through very complex dynamics, influence the entrepreneurial ecosystems, more or less determining the well-being of the start-ups located within them.

This has led to the lack of a theoretical framework for start-up ecosystems and, consequently, the lack of managerial implications

The research aims to analyze the components of the start up ecosystem, describing any determinants of these types of ecosystems that can favor or disadvantage the development of new innovative ventures.
The research question aims to understand how they support the development of startups and, parallel to this, how they contribute to the viability of the startup companies that are part of it and the particular variables of start-up ecosystems that have a major impact in some contexts with regard to influencing the well-being and development of start-ups.
Also, can the influence, weight, and importance of these identified variables and components vary depending on the geographical contexts in which the start-up ecosystems are located?

In particular, we investigate the different features, origins, and ways of operating of the actors who are part of the start-up ecosystems and how these components can impact the birth and development of start-ups.

Another question we ask ourselves is whether some best practices of some ecosystems can be replicated in others.

We will explore both excellent, famous start-up ecosystems and lower-performing

and less-known international start-up ecosystems.

Two cases of Italian start-up ecosystems (Rome and Naples) will be studied to describe and identify variables that could be defined as important conditions for the birth and development of start-ups, with particular attention paid to the role of universities and, therefore, of start up incubators.

We analyze the starting point and current state of the Italian start up ecosystem "spliced" into two micro-ecosystems (Rome and Naples) which, although belonging to a similar socio-cultural context, have very different operation models between them.

Then we proceed to a short benchmark with the most famous and productive innovation cluster in the world, namely, that of Silicon Valley, observing the main features, processes, and methods through which networks of highly performing actors are created.

The choice of these ecosystems was made to obtain a heterogeneous sample in terms of size, output, life stage, mode of birth, and "prestige." (Remember that Naples and Rome are not even mentioned in the first report in the world on start-up ecosystems, while San Francisco still ranks first.)

The case studies will also highlight whether the presence of common factors exists despite the socio-cultural and geographical diversity, providing results that, even if partial, give some input for future research on start-up ecosystems.

Then we will illustrate a proposal for an interpretative model that describes the different ways in which startup ecosystems favor the development of new entrepreneurship.

Studying these different scenarios and attempting to answer this research question can also contribute to other research questions and, therefore, the work of other researchers, such as works that focus on the factors that determine or somehow influence the success, failure, and, more generally, development of start-ups.

1.3 Research methodology.

We adopted a qualitative approach (Dubois and Gadde, 2002) due to the nature of the topic being basically related to the features and components of the start up ecosystem and the novelty of the debate. Our choice is in line with previous studies in entrepreneurship, such as Goyal et al. (2016), opting for a two-step analysis to first frame the context, then analyze it in detail. Indeed, an initial screening of startup ecosystems was performed to frame the scenario and acquire general knowledge on their activities; the evidence of these ecosystems was combined with the key themes arising from the literature to outline our research process. More in detail, broadness is recommended in the initial phase(-s) of research to avoid discarding relevant elements and to obtain an overall perspective on the problem under investigation (Yin, 2009). Such a posture proved to be useful for research carried out with either open interviews. Thus, the author investigated the key themes in the wider context of the most relevant startup ecosystems, in particular three startup ecosystems, aiming to acquire practical insights into the activities they performed.

We choose 3 start up ecosystems that are very different from each other. The first two are Italian ecosystems with opposite functioning models but inserted in a similar economic and cultural context. The third, probably the most important in the world, that of Silicon Valley, was chosen because it operates in a practically opposite cultural economic scenario.

The first two chosen start-up ecosystems are not even mentioned in the main global report on international start-up ecosystems (Report Genome), while the third ranks first in the same report.

Regarding the first step, the findings started with a desk analysis of the Startup Ecosystem Report issued by Genome (2020); through the report, the author established an exploratory research process, as in Hernández and González (2016) in dealing with the same topic and in Goyal et al. (2016) aimed at scanning the main topics dealing with a population of business entities, as UBAs are in this case.

As a second step, three cases were chosen to start data collection and set our case study protocol (Yin, 2009) in order to draw systematically from the knowledge

acquired in the first step of analysis and to infuse contextual evidence, as also suggested by Stake (1995). Therefore, the second step was based on the investigation of topics derived from both the literature review and the first step of analysis. Regarding sampling, the method we used was the convenience sample (e.g., Oppong, 2013; Bell et al., 2018), as we had to consider the need for in-depth information and the opportunity to obtain direct insights from, and interviews with, well-informed members of these contexts. Moreover, interviews on entrepreneurship in an ecosystem-based perspective have already been chosen by other scholars (e.g., Spigel, 2015).

The three startup ecosystems with an embedded UBA chosen for this analysis were NAPLES—Campania New Steel (hereinafter CNS) and ROME—Luiss EnLabs (hereinafter LEL). Additionally, these two contexts offer the advantage of obtaining information from two different approaches, as only one of the accelerators participates in the funding of startups. The third ecosystem, that of Silicon Valley in SAN.Francisco, does not have a business accelerator acting as a centralized catalyst but, as we shall see, it works differently.

We also interviewed representatives of the institutions that participated in shaping start-up ecosystems. In particular, we chose, within the partner universities of the accelerators, the professors who deal with entrepreneurship in order to bring entrepreneurship as close as possible to university teaching and to activate as many collaborations as possible between these two components.

For the interviews with the actors of the ecosystems of Rome and San Francisco, we chose a narrative analysis approach. Narrative analysis is an approach to the elicitation and analysis of language that is sensitive to the sense of temporal sequence that people, as tellers of stories about their lives or events around them, detect in their lives and surrounding episodes and inject into their accounts.

Inroads have been made into business and management research in the last 20 years (Czarniawska, 1998; Boje, 2001). The narrative approach was ideal for us because it allowed us to receive information (in particular through qualitative interviews) relating to episodes that allowed us to understand how the dynamics of the pre-chosen organizations changed over time and, therefore, from the genesis to the conformation of these and the relationships between them.

An emblematic example using a narrative approach in a way similar to ours is that of Boje (1991), who analyzed the types and uses of stories in an office supply firm based on his participant observation in the organization and interviews with key actors.

As for the interviews with the Campania new steel incubator in Naples and the staff of the Federico II University of Naples, we did not limit ourselves to the narrative approach but also used a phenomenological approach. In fact, the author is an integral part of the latter ecosystem as a Ph.D. student at Federico II of Naples and founder of a food delivery premium start-up that has undertaken the acceleration path of the certified incubator and partner of the aforementioned "Campania New Steel." We believe the phenomenological approach (Schutz, 1949) is important as an integration of the narrative one because the contribution of the author as a leading actor in the investigation corresponds to the question of how individuals make sense of the world around them and how an individual (the author, in this case) interprets the reality surrounding him.

An emblematic example in the literature is the "interpretivism in action" (Grint, 2000), which uses the example of Richard Branson to show how Branson instilled an ideological commitment to a goal by building a vision in which fun rather than rewards is seen as a reason to be associated with the Virgin brand and how Branson also created an image of himself as an entrepreneur intent on protecting the interests of the consumer.

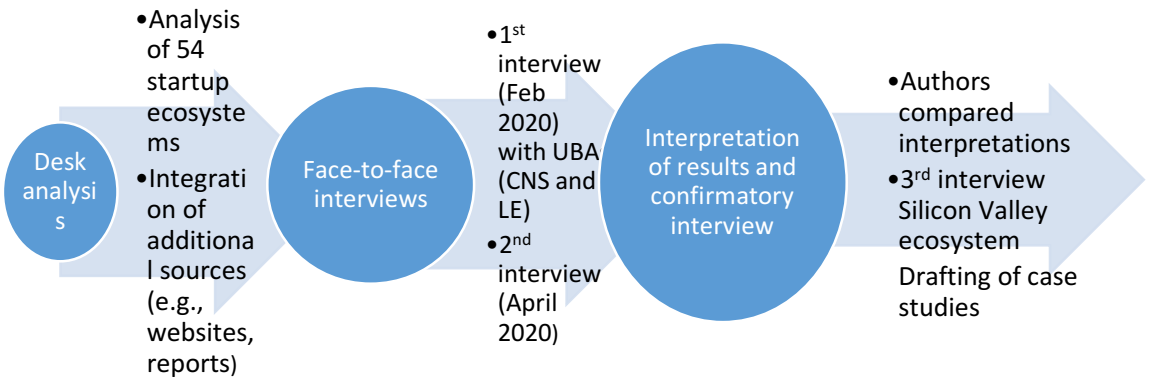


Figure 1 - Summary of the research process

1.4 Research process and Structure of the study.

This study proceeds in seven more parts: six chapters and a final section dedicated to the implications of this research with regard to the results of the interpretative model proposed for the interpretation of the different dynamics of international ecosystems.

The originality in the structure of the work lies in the fact that the thesis does not develop along a path that initially sees the theoretical framework and then, gradually, the practical implications. On the contrary, each chapter represents a component of the ecosystem of start-ups and develops, in most cases, starting from a research paper. In this way, we have a review of the literature and the elements in most of the chapters.

The beginning of the thesis is a prologue that acts as an "initial frame," which is useful for outlining and clarifying the study logic but also for writing a literature review capable of describing the state of the research regarding the start up ecosystem.

The other four chapters, i.e., chapters 2 to 5, will analyze the elements forming the start-up ecosystems: respectively, Entrepreneurs and Entrepreneurship, Business Incubators and Accelerators, Institutions and in particular Universities and the role of technologies, a case study before the final discussions.

Research process

The case studies selected for the first step of the analysis are startup ecosystems all over the world, listed in the Startup Ecosystem Report (Genome, 2020). Fifty-four startup ecosystems were considered. Then, additional sources were scanned to expand the amount of information available beyond the Genome Report; these resources included websites and reports of national governments, official websites, and documents and reports of firms shaping the startup ecosystem and published on their official websites, as well as startups reporting on their evolution through similar reports. Some examples of additional sources are the website of the Dutch Ministry of Economic Affairs, reports issued by U.S. technology-based companies, and documents prepared by Singaporean business angels and Australian startups. The combination of these sources ensures the reliability of the information considered and favors the validity of the analysis; indeed, the use of multiple sources supports the efficient, reliable capture of key information, as suggested by Jonsen and Jehn (2009), with reference to triangulation in qualitative studies.

In the second step of the research, data and insights were collected through open direct interviews. It was anticipated that the content of the interviews would offer additional insights into the evidence that emerged from the desk analysis of the startup ecosystems screened by Genome. The interviews favored a further increase in reliability, as both new sources and new methods of analysis expanding the consideration emerged from the first step of analysis (Jonsen and Jehn, 2009). Moreover, this evidence was infused with insights from the literature, leading to the identification of the topics listed in Table 2 in the case study chapter.

To increase the reliability of the insights derived from the answers to the above questions, we sought confirmation in a second interview a few weeks later; this led us to check our interpretation of the evidence. Thus, the author performed the last interviews in April 2021—one in person, one online via Skype each—and opted for verbatim transcription of interview data to avoid missing any element emerging from them. The author chose to analyze the content on their own and to then compare their ideas and reduce the bias of personal interpretation. This analysis took place as an interpretation of the transcription through the themes recalled above and the key items shaping each of them. Specifically, the author scanned the content of the

transcripts to look for information about the key items; then the author mutually reported the output of this analysis to compare and combine evidence. Additionally, to further reduce bias, the authors interacted again with the key members interviewed, aiming to ask for confirmation of the interpretation, as suggested by other scholars (Bell et al., 2018) including those investigating entrepreneurship (e.g., Chandra, 2017). This third interaction occurred several months later (the end of 2020), but no new elements or discording information emerged. Further confirmation of the first interpretation was achieved.

Our research process is represented in Figure 1.

1.5 International scenario and impact of COVID-19 crisis: Insights from global report startup Genome.

Figure 2 - Geographical representation of the start-up ecosystems of the Genome report

Today, the global startup economy is large, with a value of nearly $3 trillion. Already in 2019, there were nearly $300 billion in venture capital investments worldwide.

However, the explosion of the high growth and innovative entrepreneurial initiatives of the last decade, which represent the primary growth engine of the economy in several markets, has been accompanied by the rise of new emerging startup ecosystems around the world, thus influencing the future of the global economy (Startup Genome, 2020).

Today, more than 80 ecosystems globally have produced billion-dollar startups.

When the term was popularized in 2013, only 4 ecosystems produced unicorns or billion-dollar exits.

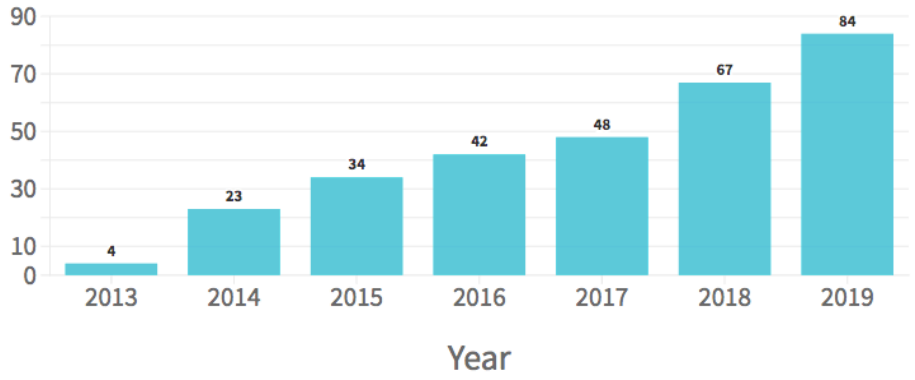


Figure 3 - Ecosystems with billion-dollar club startups (unicorns or exits), 2013-2019

New ventures are one of the factors with the highest influence on economic development because of their innovation and creative destruction, which will be deeply explained in the following paragraphs. High-growth technological companies have entered most areas of society and have been replacing low-performing industrial-era companies. Examples of the described phenomenon are: the phenomenon of hotel chains being replaced by Airbnb, revolutionizing the travel industry; social media, such as Facebook and Twitter, upgrading traditional newspapers; and Apple and Spotify replacing traditional retail music chains (Compass, 2015).

Nonetheless, even at the end of 2019, it was not all rainbows and unicorns.
The world's major report on the start-up ecosystem of the last 10 years shows that most of the high-growth startups, mainly technology-oriented, have emerged from a few startup ecosystems, like Silicon Valley and the Boston area.

In fact, value creation by ecosystems remains concentrated, with about 74% of all value being concentrated in the top 10 performing cities globally.

Inclusion remains a fundamental challenge for tech ecosystems, with only 14.1% of founders globally being female (Genome, 2020).
Furthermore, it should be considered that the famous phrase "9 out of 10 startups fail" has no empirical relevance. Several studies show that the failure rate of start-ups around the world remains quite high.

A study by the Product Development and Management Association (PDMA) found that failure rates vary from one sector to another, from 35% for healthcare to 49% for consumer goods (Castellion and Markham, 2014).
Another academic paper published in 2013 in the Journal of Product Innovation Management analyzed the existing academic literature and identified 19 "peer reviewed" articles between 1945 and 2004, noting failure rates between 30 and 49%, with some understandable variations due to industry differences.

The COVID-19 crisis also negatively impacted global start-up ecosystems, as it did all other ecosystems:

- Layoffs among startups are rampant. The start-ups that did not lay off staff had to reduce workers' hours with part-time contracts
- Startups are facing double pain, i.e., a decline in consumer demand and a decrease in investments in venture capital. Four out of 10 startups in the world will die if they do not raise funds as soon as possible because their business costs remain constant and unchanged

In 2020, the state of the global startup economy can be seen through two main angles: the calm before the storm, up to December 2019, and the consequences of the COVID-19-triggered crisis.

The latter Startup' Genome predicted in 2019 that 100 cities would cross the $4 billion threshold in ecosystem value by 2029. It looks like we might hit that milestone even earlier.

1.5.1 Ranking the global start up ecosystem: Top 20.

Startup Genome's coverage of ecosystems is growing. Their analysis—which expanded from 60 ecosystems in 2018 to 150 in 2019 and to nearly 300 today—has allowed us to rank the top 40 global startup ecosystems as well as 100 emerging startup ecosystems. In the past, our ranking included only the top 30 startup ecosystems.

To support the purpose of this Ph.D. thesis, we will report the ecosystems that ranked in the top 10 and the evaluation criteria that Genome used to draw up the ranking.

At the end, we will share some key findings of the aforementioned ranking.

The six parameters that the Genome report used to classify global ecosystems are as follows: Performance, Funding, Market Reach, Connectedness, Talent, and Knowledge.

The top 10 ranking is:

#1 Silicon Valley (North America)

#2 New York City (North America)

#3 London (Europe)

#4 Beijing (Asia Pacific)

#5 Boston (North America)

#6 Tel Aviv—Jerusalem (Europe)

#7 Los Angeles (North America)

#8 Shanghai (Asia Pacific)

#9 Seattle (North America)

#10 Stockholm (Europe)

Genome Ranking Key Findings

- The top five global startup ecosystems remain the same, although with some

movement among them. Silicon Valley maintains its #1 position. New York remains at #2, although London is now tied with it. Beijing is at #4 and Boston is at #5. Among the top five global startup ecosystems, only London was not in the top five in the 2015 ranking. Tel Aviv—Jerusalem and Los Angeles follow, both tied at #6.

- The 2020 rankings have seen the growth of many R&D powerhouses, i.e., those ecosystems growing largely due to their strengths in research and patent production. Tokyo (#15) and Seoul (#20) are prime examples of this, with both ecosystems scoring the maximum in the Knowledge Factor—a measure of R&D activity. Shenzhen (#22) and Hangzhou (#28) also fit this ecosystem archetype.
- The rise of Asia is more visible this year, with 30% of the top ecosystems coming from the region, compared to 20% in 2012. Of the 11 new ecosystems that made it to the top ecosystems list, six are out of Asia-Pacific.
- There are two new entrants in the top 20 global startup ecosystems: Tokyo (#15) and Seoul (#20). They displace Bangalore (which fell primarily due to low levels of funding) and San Diego.
- In addition to Tokyo and Seoul, new entrants among the top 30 include Shenzhen (the advanced manufacturing hub, at #22), Hangzhou (home to Alibaba, at #28), and São Paulo (#30, returning to the top ecosystems list after falling off in 2017).
- Six ecosystems debuted in the list of runners-up of top global ecosystems: Salt Lake-Provo and Dallas (tied at #31 with other ecosystems) as well as Copenhagen, Melbourne, Montreal, and Delhi, tied at #36 with Dublin.

1.6 Start up ecosystem in the management literature: From biological comparisons to business and service ecosystems to start-up ecosystems.

In general, the term “ecosystem” means a biological community of interacting organisms and their physical environment of interaction is a real system.
The term "ecosystem" was adopted for the first time in the social sciences and economics by Moore (1993), who underlines how the environment external to the company and, therefore, to entrepreneurship—i.e., the "business ecosystem"—is important and affects performance.

Thus, the term “start up ecosystem” has roots in biology. Defining a start up ecosystem can also be done somewhat in the same sense. For this reason, most of the management literature defines a start-up ecosystem as an environment made up of people who work there, start-ups in their various phases, and different types of organizations in one place physically or virtually, interacting as a system to create new start-up companies (Deeb, 2021).
To better understand how the studies have gradually converged toward the aforementioned definition, we believe it is appropriate to review the literature on independent studies that have sought to evaluate what a start-up ecosystem is, bringing to light very different aspects that make the topic very complex. Therefore, through a historical excursus, we will show the genesis of the term adopted in the literature.

Different definitions have spread in the literature, hand in hand with the evolution of the phenomenon, starting from the concepts of ecosystems in economic meaning and the service ecosystem (Vargo and Lusch, 2014; Mele C, Russo Spena T, 2016; Barile and Polese, 2010; Peters et al., 2014) up to talking about very and own start-up ecosystems (Tripathi et al., 2018; Dhakal, 2020; Cukier, 2019).
In exploring the main contributions throughout the history of studies on business and the environment, and therefore on ecosystems, it is clear that, depending on the different historical periods, each contribution highlights particular characteristics (Greco and Tregua, 2020).

Starting from the early 1990s, many theoretical contributions have focused on whether the biological comparison with the company is correct for purposes of describing its development within an interrelated system in which each part has a precise function (Rispoli, 1984; Vicari, 1991; Tagliagambe and Usai, 1994; Moore, 1996; Sciarelli, 2004).

Subsequently, after the first decade of the 2000s, many scholars focused on a concept of environment in which the company operates in a much more complex manner, defining it as a "business ecosystem" where the importance of very transversal concepts such as those of resources, management of knowledge, corporate culture, and business networks (Moore, 2006; Cohen, 2010; Barney, 2006; Isemberg, 2011; Colin and Brown, 2014).

Moore asserts that the ecosystem represents a response to the main challenge of the modern economy, namely, the need to promote innovation and creativity in order to identify answers to economic and social problems (Moore, 2006).

Immediately after the concept of ecosystem is once again extended and enriched, in fact, the concept of service ecosystem begins to be theorized (Vargo and Lusch, 2014; Mele Russo Spena, 2016; Barile and Polese, 2010; Peters et al., 2014). In the context of service ecosystems, the concept of value co-creation view in which service underlies all economic activity according to the service-dominant logic (Vargo and Lusch, 2014).

So the concept of the start-up ecosystem has formed gradually over time. Although there have been some hints during the past years, we will show that only after 2015 did it experience effective development.

1.6.1 Start up ecosystem, main conceptualizations.

The notion of the startup ecosystem originates from the pioneering definition of “business ecosystem” provided by Moore (1996) and describes the context offering opportunities to start new business ventures due to an impressive encouraging boost to entrepreneurship (Bala Subrahmanya, 2017). Indeed, empirical investigations also show the positive impact of the activities promoted in startup ecosystems on both

new ventures and the maturing of running firms (Aleisa, 2013; Hernández and González, 2016). Additionally, the notion of startup ecosystem emerges as a zooming-in on the entrepreneurial ecosystem; Bala Subrahmanya (2017) represents it as the development of contextual opportunities. An inspiring contribution on the tie between entrepreneurs and an ecosystem-based approach has been offered by Lusch et al. (2010), who state that a stronger entrepreneurial approach ecosystem can enhance the outcome of resource usage in firms.

A startup ecosystem is a segment of the broader entrepreneurial ecosystem. The most analyzed connections of the community's entrepreneurial support network are those between entrepreneurs, between formal support organizations, between entrepreneurs and key support entities, and with other organizations (Motoyama and Watkins, 2014).

The concept of the startup ecosystem mirrors the openness to blurring firms' boundaries and favoring the advantages of being part of a broader ecosystem; indeed, an ecosystem is known for its permeability to new stimuli from additional actors, as the dynamics of an ecosystem depend on the openness brought about by its features and tools (Yun et al., 2017). Similarly, a startup ecosystem as a business context favors the deployment of regional innovation and the expansion of the business environment, with positive outcomes in terms of domestic product and employment (Krajcik and Formanek, 2015). The authors defined the regional startup ecosystem as an effective method for approving regional innovations and the development of the business environment, as well as ensuring domestic product growth and employment in the country in question. Moreover, a startup ecosystem is framed as a dynamic context formed by people and startups in a system offering chances to create new business ventures (Gobble, 2014).

The following sub-sections, after an overview of the first and most important conceptualizations, delve into the extant literature on startup ecosystems from three perspectives, based on actors, geographical contexts, and resources. The three perspectives will then lead to a review of the flourishing literature on incubators and accelerators as support factors for the new era of entrepreneurship (Chapter 3).

1.6.2 Start up ecosystem and the influence of market actors.

Some authors theorize that startup ecosystems focus a lot of attention on the actors; Krajcik and Formanek (2015) describe the key role of actors in depicting a startup ecosystem and its potentialities, as they state that (a) actors such as startups, policy agencies, incubators, accelerators, and risk capital providers are structural components, and (b) the openness may favor the joining of new actors because it "is rare to have a complete startup ecosystem" (p. 15). In a similar vein, Franco-Leal et al. (2019) identify various stages of a startup ecosystem and state that each of these stages has its tasks and resources; therefore, relationships with actors are necessary to fill the gaps related to both activities to be performed and resources to be integrated.

Lauzikas et al. (2015) offer a slightly different view, though still based on actors; indeed, they consider a startup ecosystem as being shaped by initiatives from both its members and external ones such as dimensions supporting the development of new ventures. Similarly, Sipola et al. (2016) frame this ecosystem as a setting whose features include contextual factors, a temporal dimension, and renewal mechanisms. Local actors and business competence are the most relevant contextual factors; the prior economic history and policies, as well as the newness of startups, outline the temporal dimension, while institutions and their dynamism and the role of failure lead to the renewal mechanisms. This latter is not taken into account in the more established literature, as stated by authors borrowing conceptualization from other colleagues. This occurs in the contribution by Cukier and Kon (2018), leaning on Isenberg (2011) to identify regulations, market, finance, knowledge, entrepreneurial capabilities, and entrepreneurship culture as factors affecting the performance of an entrepreneurial ecosystem. Therefore, the institutional dynamism in incubators and accelerators favors either the emerging or the maturity of startups (Josh and Satyanarayana, 2014).

Incubators and accelerators are critical agents in a startup ecosystem and the broader entrepreneurship community (Hernández and González, 2016), whose growth is also based on out-of-the-ordinary events, such as TechMeet-up, Open Coffee Club, Startup Weekend, and so on (Hernández and González, 2016; Paço et al., 2016; Fraiberg, 2017). The entrepreneurship community can be seen as an ecosystem, as

in Vargo and Lusch (2011)—namely, "a relatively self-contained, self-adjusting system of resource integrating actors connected by shared institutional logics and mutual value creation through service exchange" (p. 176). Such a view provides evidence of the critical role played by multiple actors, resource integration contexts, an institutional approach representing the working mechanisms of an ecosystem, and the orientation to create value through a service-for-service exchange. Finally, scholars paying attention to startup ecosystems enforced this perspective, as they describe universities and university-based accelerators as parts of this ecosystem and its mechanisms (Mansoori et al., 2019). More in detail, they draw a parallel between universities as components of the entrepreneurial ecosystem—as in McAdam et al. (2016)—and university-based accelerators as stimulating new venture creation as well as startup growth.

1.6.3 Start up ecosystem and the influence of geographic variables.

On the other hand, some authors theorizing about startup ecosystems focus significantly on geographic variables. One of the contributions adopting such an approach is Cukier et al. (2016), who define a startup ecosystem as follows: "a limited region within 30 miles (or one-hour travel) range, formed by people, their startups, and various types of supporting organizations, interacting as a complex system to create new startup companies and evolve the existing ones." Similarly, Cohen (2006) starts from the conceptualization of entrepreneurial ecosystem to propose his view of the startup ecosystem; to do that, he claims that entrepreneurial ecosystems "represent a diverse set of interdependent actors within a geographic region that influence the formation and eventual trajectory of the entire group of actors and potentially the economy as a whole. Entrepreneurial ecosystems evolve through a set of interdependent components which interact to generate new venture creation over time" (pp. 2-3). Some years later, Bernhofer and Han (2014) focused on the social and cultural background as elements favoring innovation and personal traits; therefore, due to the inner nature of startups, with innovation and the personality of the entrepreneur at their core, the authors describe the startup ecosystems evolving throughout time because of the results of innovation and the

personal features of the entrepreneurs, mainly from the local context. A narrower approach is proposed by Audretsch and Belitski (2017) due to the attention they paid to cities as the context hosting startups; thus, the socio-economic, institutional, and information environment of a city shapes the startup ecosystem and the startups themselves. Similarly, Miles and Morrison (2018) enforce this idea by observing rural contexts; they consider the context as embedded in both the processes leading to the creation of a startup and the activities they perform.

Cukier et al. (2016) define a startup ecosystem as "a limited region within a 30-mile radius (or an hour of travel), made up of people, their startups, and various types of support organizations, interacting as a complex system to create new startups and make existing ones evolve."

Building a functioning startup ecosystem is necessary for the survival of the startups themselves. These start-ups, with scarce resources in terms of both money and knowledge, are unlikely to be able to compete with more established entities in their target markets.

Ecosystems explain why so many successful startups originated in academically and economically strong areas like Silicon Valley and Singapore. In fact, the volatility of startups generates a high failure rate, which tends to decrease when they come into contact with ecosystems.

Furthermore, startup ecosystems have a significant economic impact, as they increase the development of internal products and create new jobs guaranteed by the flow of ideas, knowledge, talents, and resources within (Singh, 2018).

1.6.4 Start up ecosystem and the importance of resources.

The third group of contributions we identify describes a startup ecosystem based on the resources shaping it and contributing to its evolution.

There is a definition of “startup” that emphasizes the importance of the resources that an eco-system offers or does not offer; indeed, Crowne (2002) describes a startup as an organization with limited experience, working with inadequate resources, and influenced by several factors, such as investors, customers, competitors, and the use of dynamic product technologies. Great importance is assigned to knowledge and risk capital as resources supporting the setup of a startup ecosystem and the startups

and affecting the change to be successful (Hemmert et al., 2016). Furthermore, Malecki (2018) affirms that the nature of an ecosystem is that of an umbrella—as both term and context—and, therefore, an ecosystem is a setting consisting of resources and performing activities because of them. Similarly, Buchnik et al. (2018) state that the performance of a startup ecosystem depends on the various resources available; they refer to both those usually related to all businesses (such as resources, knowledge, and skills) and those specifically related to new ventures (such as contests, simulations, a learning program made of lectures, courses, and mentoring). Finally, the new approaches toward resource integration and mutual exchange represent stimuli for entrepreneurs, as they give fluidity to startup ecosystems, favoring the permeability of new competencies, additional actors, and new ways of doing things. These elements are all needed in an innovation-oriented context (Fraiberg, 2017; Ventura et al., 2019), but further research has been called for to depict how the activities of startup communities can be improved (Manaba et al., 2019) and how accelerators' members can impact the startup ecosystems (Cohen et al., 2019).

Tripathi et al. (2018) explore various definitions of the term "startup ecosystem" and conclude that a startup ecosystem involves different stakeholders and support organizations, collaborating in the environment of a particular region to form new startups and give impetus to existing ones (Tripathi, Seppänen, Boominathan, Oivo, and Liukkunen, 2018).

The role of the ecosystem is not limited to the survival of startups; it also involves the growth, functioning, and reach of these enterprises. In this era of globalization, an appeal to not only local but also global consumers helps the startup to expand its operations while foreign investors tend to evaluate not only the startup but also the ecosystem in which the startup operates (Dhakal, 2020).

To sum up, our review led us to consider actors, contexts, and resources as the three main drivers shaping a startup ecosystem and the support it can offer to startup growth. Indeed, the next chapter, Chapter 3, focuses on these themes and aims to scan the literature on incubators and accelerators.

In addition to procedures with a review of the scientific literature, it is useful to mention some non-scientific contributions that are still very useful and relevant, such as those coming from important organizations and newspapers

The OECD provides a definition of "entrepreneurial ecosystem," which acts to be summarized with respect to the main results of previous academic contributions. It refers to "entrepreneurial ecosystem" as a *set of interconnected potential and existing entrepreneurs, entrepreneurial organizations* (e.g., firms, venture capitalists, business angels, and banks), *institutions* (e.g., universities, public sector agencies, financial organizations), and *entrepreneurial processes* (e.g., business birth rate, number of startups, levels of entrepreneurial ambition, business failure rate, etc.), which *connect and manage performance within the specific entrepreneurial environment, both formally and informally* (Mason and Brown, 2014).

Experts' and scholars' focus is increasingly on the "system," considering the market, policy, and culture domains as characterizing elements of an entrepreneurial ecosystem (The Economist, 2014).

Similarly, Startup Commons (2018) states that a startup ecosystem is an interactive system made up of people, startups, and different organizations in a physical or virtual location to facilitate new startup companies (Startup Commons, 2018).

There are other contributions that we have not considered. We refer to those in the medical and health literature. In the review of the literature, these act differently than they do in management studies. These do not provide a preliminary focus on the studies of start-up ecosystems in general but immediately give a medical cut to the review, which does not help us.

For purposes of this Ph.D. thesis, we would like to define a start up ecosystem as a set of both potential and existing interconnected factors: entrepreneurial organizations and institutions like firms, business incubators and accelerators, universities, public sector agencies, venture capitalists, business angels, banks, and start ups with particularly disruptive and driving ideas and technologies.

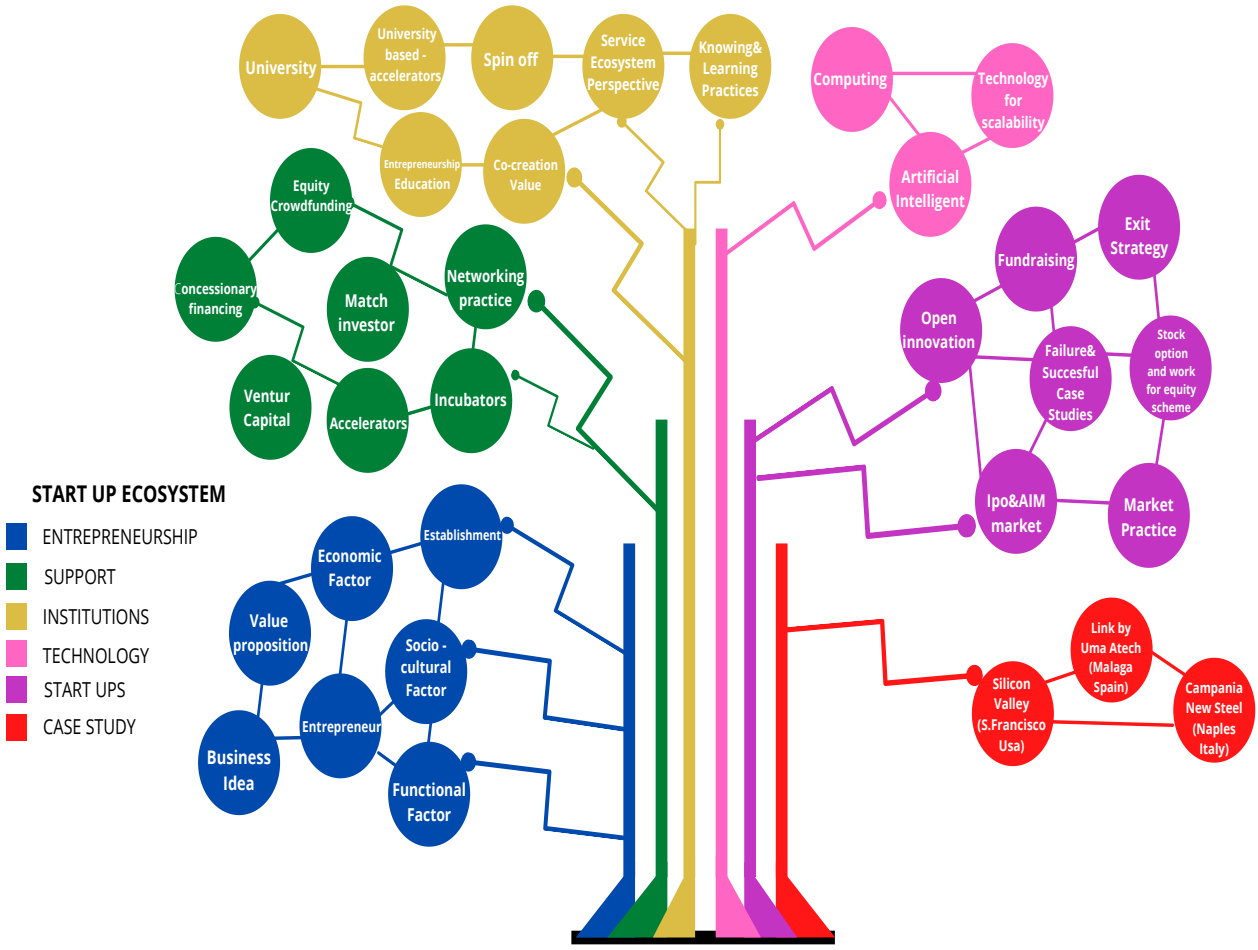


Figure 4 - Our elaboration of the graphic description of the components of the start up ecosystems

CAP 2 Entrepreneurship and start up

In this chapter we take as a reference the main contributions in the field of entrepreneurs and entrepreneurship and we propose to "photograph" a state of the art of the studies of these two concepts from the very beginning, comparing them, subsequently, with the studies on new entrepreneurship in reference to diffusion of start up companies.
It is important, first of all, to pay attention to the evolution over time of the concepts of entrepreneur and entrepreneurship and to premise the fact that by many scholars it has been defined as "disordered" and "asymmetrical" (Zanni 1995, Hisrich 2006, Bygrave 2006)

Clarifying how the figure of the entrepreneur has been interpreted by the scientific literature in the past appears to be an essential condition for exploring the new forms of innovative entrepreneurship, the ways to make the latter as prosperous as possible and to observe and study the factors that determine the success or failure of these new forms of entrepreneurial enterprises called start up companies.

The goal, given the amount of contributions in the field of entrepreneurship, is very difficult but essential if we want to clarify the context and contribute to the advancement of research.

2.1 The entrepreneur in the management literature.

In the following paragraph we will carry out a critical re-reading of the main international scientific works.

To report a literature review as complete as possible on entrepreneurship, we took as a starting point the theoretical framework of mography by Diego Matricano (2015). The entrepreneurship studies, as studies of other sciences, they need to create their own theoretical paradigm in order to allow industry researchers to propose the following advancements. This in the case of entrepreneurship is really difficult because the latter is influenced by different sciences that enrich it on the one hand

but complicate it on the other.

This is why it is impossible to use a single interpretative paradigm but there is a need to use "a multidimensional investigation approach" (Matricano, 2015, p.30)

In fact, interdisciplinarity strongly influences attempts to develop entrepreneurial theories. So much so that according to some scholars (Davidsonn, Wiklund, 2001) acknowledge the complexity of the entrepreneurial phenomenon means having to use different schools of thought for his study and find the right balance between them.

It seems clear and almost superfluous to reiterate that such approaches should not suggest studying the phenomenon of entrepreneurship in a fragmentary manner by studying individual phenomena individually but on the contrary they must be interpreted as a whole.

The purpose of a multidisciplinary study is precisely to find the right balance and the right relationship between the different disciplines.

The right relationship can be achieved by taking into consideration some guiding concepts driven in literature such as those of “proximity” and “compatibility”. (Okhuysen and Bonardi 2011. In particular, by "proximity" scholars mean “the conceptual distance that exists between the phenomena that the lensess address in their original conceprion” and for "compatibility" the same scholars mean “the degree to which theories that are brought togheter rely on similar or dissimilar individul decision-making processes, organizational mechanisms, or other properties in the development of their explanations” (Okhuysen and Bonardi 2011 p.7). Other concepts that can favor the right balance between multi-disciplinary approaches are those of "sensemaking" and "sensegiving" (Corley and Gioia 2011). These are activities through which we try to direct future research towards topics which, being the meeting point between theory and practice, allow for the development of new research directions.

2.1.1 The four approaches for a multidimensional study of Entrepreneuship

We have chosen a theoretical framework based on four approaches to collection the first conceptualizations on the Entrepreneur.

So the above reading is performing using the four main approaches: a historical approach (Horn 1989), a functional approach (Stevenson et al 1999, Hisrich 1998, Timmons 1994), a psychological approach (Kirzner 1973, Ciappei1990) and an Multivocal Strategic approach (MacMillan 2000;Vankataraman 2001; Sarasvathy 2001, Matricano 2015) which eventually contemplate an overview of these traditional approaches, integrating them with the new concepts of environment, networks and open innovation, creating an approach that, in fact, saw its beginnings already in some classical studies but which develops in more recent studies of entrepreneurship giving the input to a study of new innovative entrepreneurship and to the phenomenon of the spread and proliferation of start-up (Smith, Druker, Sarasvathy, Chersbrugh, Cohen, Blank).

HISTORICAL APPROACH

The historical approach (Marx 1964, Weber 1904, Parson 1956) encompasses the different theoretical frameworks of the concept of entrepreneur mainly in reference to the historical phases and the reasons in terms of historical social variables that explain the spread and genesis of the phenomenon. The historical approach encompasses the different This approach is therefore based on the identification of specific socio-cultural variables, in certain historical periods, which have favored the spread of entrepreneurial activity and the configuration of specific types of entrepreneur. Most of the theoretical contributions of this approach come from social historians of capitalism. According to these authors, the configurations of the various types of entrepreneurs are certainly based on the motivations of the subjects but which are in any case influenced by the ideological and social variables of each historical period.

For example, in the studies of Karl Marx the entrepreneur is identified as one who is possessed by the lust for wealth because driven by capitalist society that is only a stage in the historical development of humanity (Marx 1964).

Contrary to the studies of MArx but always with a view to a historical-social framework, there are those of Max Weber. According to this scholar, the entrepreneur's vocation and his role are something “transcendental” almost of a religious nature. The vocation and activity of the entrepreneur in the era of capitalism, according to Weber, correspond to an "economic rationalism". Through the latter, the individualistic and competitive will of the entrepreneur in Marx's vision is overcome, but on the contrary it is argued that the modern entrepreneur (of that era) produces for the common good because God wants it. (Weber 1904)

FUCTIONAL APPROACH

The functional approach (Cantillon1755, Smith 1776, Knoght 921) contains the theoretical contributions on the entrepreneur that emphasize, precisely, the concept of business function and purpose and therefore defines the different meanings of entrepreneur figures based on the functions they perform, identifying the entrepreneurial phenomenon in the performance of certain functions or in the possession of certain requirements. This approach therefore pays particular attention to the elements that constitute the essence of the entrepreneur's role.

The emblem of this approach is undoubtedly the contribution of Cantillon where a precise content and particular functional relevance is given for the first time to the term Entrepreneur. So much so that his work "Essei sur la Nature du commerce en Gèneral" (Cantillon 1755) is considered by many to be the first attempt in the history of entrepreneurship studies to describe the figure of the entrepreneur as a supporter of the risk associated with execution of an economic activity.

Adam Smith’s (1776) vision also focuses on the concept of functions. Unlike Cantillon's previous vision, Smith's asserts the concept of multi-function of entrepreneurs, that is, as a capitalist-owner subject and as a combinator of productive factors.

In fact, in his book entitled The wealth of Nation we read:

"*Thus, of the product of the land, one part replaces the capital of the farmer, the other pay his profit and the rent of landlord; and thus costitutes a revenue both to the owner of this capital and to some other persona s the rent of his land*" (Smith 1776 p.123).

The main interpreter of this approach is F.H. Knight who in his work "Risk Uncertainty and Profit" (Knight 1921) proposes a vision of an entrepreneur that is very close to Cantillon's previous one of about two first centuries.

According to Knight, the essence of the entrepreneur's role lies in making decisions in conditions of "uninsurable uncertainty " so "uninsurable risk" and therefore aiming to probably reach future profit opportunities.

PSYCHOLOGICAL APPROCH

The psychological approach encompasses the theoretical contributions that focus and deepen the reasons for the will and the entrepreneurial choices and the psychological and behavioral traits that characterize entrepreneurs.

In concrete terms, the origin of this approach can be traced back to the researches of Schumpeter (1911). According to the scholar, in fact, to introduce innovations into the economic system, the entrepreneur must have some specific personal characteristics. So he should have a personality that allows him to manage risk, exercise leadership, be intuitive and have an innate tendency to problem solving.

After Schumpeter's contribution, the psychological approach is consolidated and acquires relevance with the introduction of the concept of "alertness" (Kirzner, 1973), that is a state of alert that allows the entrepreneur to seize market opportunities that others have not yet cultured.

Other studies have focused on the desire for "independence" from other higher professional degrees and "ambition" to achieve success and social recognition and thus a need for prestige and self-realization (Maslow 1943, Mc Clelland 1961, Davison 1963,).

This moment marks the passage in which many scholars have begun to focus the attention of their studies towards the concept of "entrepreneur psychology". This widespread interest this widespread attenzone caused a huge inevitable encroachment in other areas of research that has helped to make very messy entrepreneurship studies as described above.

MULTIVOCAL STRATEGIC APPROACH

The multidimensional approach to the study of the entrepreneur and therefore of entrepreneurship, while starting from the results achieved by the previous traditional approaches, adds new perspectives which can be considered the main inputs to the studies of new entrepreneurship and startup ecosystems.

Before moving on to an analysis of the most recent studies within this approach, some studies should be considered which, although not recent, can be considered precursors (Schumpeter 1911, Drucker 1985)

In the book Innovation and Entrepreneurship, Drucker assumed that "*INNOVATION is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being learned, capable of being practiced"*. (p.20). A clear reference to the fact that Entrepreneurs need to search purposefully, in the environment outside, for the sources of successful innovation.

The search for opportunities therefore already lays the foundations in Drucker's vision but spreads decisively during a new approach that in the literature is called "Strategic Entrpreneurship" (MacMillan 2000; Vankataraman 2001; Sarasvathy 2001). According to this theoretical framework of the Strategic Entrpreneurship, an entrepreneur is involved and inspired in the identification of an entrepreneurial opportunity which must then be selected and exploited.

According to the strategic Entrepreneurship, the entrepreneurial process begins with the phase of identifying an entrepreneurial opportunity that can take place in three different ways: recognition, discovery and creation (Sarasvathy et. Al 2008; Barney 2007)

Based on these latest frameworks, it subverts the contemporary vision of the entrepreneur. According to Sara Sarasvathy (2001), in fact, the latter no longer has a reference market to analyze, predict and control but, on the contrary, can only leverage its cognitive abilities to seize certain business opportunities in unpredictable and constantly changing contexts. according to what is called an “effectual logic”. (Sarasvathy 2001)

Another recent integration, very related to this PhD thesis work, concerns the environment in which the company operates. In any case, the latter influences the entrepreneur's actions and this is true both in positive contexts (expression of entrepreneurial vitality) and in hostile contexts which, precisely because of the difficulties that arise, can induce the entrepreneur to adopt a pro active behavior (Bygrave 2003)

The Californian economist Henry Chesbrough () identifies a strategic and cultural approach to innovation according to which entrepreneurs, to create greater value and compete successfully, should also use resources from outside (startups, universities, institutions, etc.)

According to Chesbrough (2003), the paradigm of "closed innovation" is definitively supplanted by that of “Open innovation” where the search for opportunities is not done within the confines of the company and the owners of the companies need not fear that they are not the only owners of inventions and its resources” (Chesbrough 2003)

Entrepreneurs have to keep up today with an ever more complex, global, and dynamic environment. A new concept of entrepreneurship is born.

Approach	Authors	Key Focus
Historical approach	Marx	*Individual possessed by the lust for wealth*

Historical approach	Weber	*Individual driven by an almost transcendental vocation also of an ethical and religious type*
Historical approach	Parson	*individual with specific social function*
Functional approach	Cantillon	*Individual other than the landowner and with operational functions*
Functional approach	Smith	*Individual who combines and transforms the factors of production*
Functional approach	Knight	*Individual who takes the risk*
Psychological Approach	Schumpeter	*Individual who promotes innovation*
Psychological Approach	Kirzner	*Opportunity sensitive individual*

Psychological Approach	Maslow	*individual aiming to scaling the social ladder*
Multivocal Approach (the basics)	Schumpeter/Drucker	Innovation
MV/Strategic approach	Sarasvathy S	Effectuation
MV/Strategic approach	Chersbrough	Open Innovation

Tab 1 Our Systematization of multidimensional approaches for the study of entrepreneurship

Finally, it seems necessary to mention some limitations to entrepreneur studies:

Before studying entrepreneurship, we began to study the entrepreneur but the main problem was that we did not know what to investigate on the figure of the entrepreneur

This is why, subsequently, and therefore in more recent years, studies have spread not on the figure of the entrepreneur but on entrepreneurship as a complex phenomenon and as a business administration discipline. Therefore to date these studies present a better theoretical, methodological and academic arrangement due both to the presence of monographic texts but above all to the presence of numerous specialized scientific journals.

2.2 The new entrepreneurship: Start up Companies in literature.

Disruptive ideas leading to start-up are growing. Start-up companies are increasingly growing by recent digital technologies.

Many scholars have investigated the growing phenomenon of startups in the last decade from various angles

During the past years, scholars have underestimated the importance of the birth of new innovative companies considering them an integral part or at most a particular dimension within the general study on entrepreneurship (Matricano 2019)

In literature several contributions have analyzed the phenomenon of startups and have tried to define what a start up company is.

It is certain that difficulties arise in finding a single and universal definition of startup.

Many actors, such as scholars, business experts, investors, etc., focus on the issues with different perspectives that focus on different elements in identifying a startup

Our attempt to systematize the definitions of start-ups is along the lines of the theoretical framework of Gartner and Katz (1988).

We have chosen three of the four properties, proposed by Gartner and Katz, to develop a structure that allows the identification of organizations in the early stages of their creation process: "Prospective Intention", "Resources&Activities", "Relations with the environment".

Start up Definition with focus on "futur intention"

Firt at all The term "startup" should not be confused with *the startup phase of an organization*, reflecting the first stage in the firm's lifecycle, during which the business is firstly launched into the market or acquired and relaunched through a new start up.

Other definitions, on the other hand, place too much emphasis on the concept of "right idea" (Druker, 1985) and even these according to this study are equally inappropriate. So much so that Edinson (1898) claimed "*Genius is one percent inspiration and 99 percent perspiration*"

Start-up companies are newly born companies which struggle for existence whereas in the early stage period, the entrepreneur himself/herself initiates a set of activities to turn his/her idea into a profitable business (Salamazadeh 2015).

Some of the most frequently considered definitions of startup company in the extant literature are particularly suitable for the analysis of this work. Indeed, one of the most cited definitions considers start-up as a temporary organization used to search for a repeatable and scalable business model (Blank 2017). The term "temporary" and the term "search" should be highlighted, because the future of a start-up is to stop being a start-up to become part of a big business or to fail and move on to another opportunity. In fact, the difference between a start-up and a small business is that this latter is not capable of this type of rapid scale and probably does not even go towards this goal.

The term “scalable business model” in this case means a business that can increase its size (therefore its customers and its turnover) exponentially without using proportional resources.

A scalable business model should be replicated in different periods and different contexts, applying only little modifications.

The digital Transformation with new inventions, new software and algorithms is essential for support this kind of growth.

Organizations such as Facebook, Google, Skype, Airbnb have found a repeatable and scalable business model; thus, they are companies, not startups anymore. A startup is *temporary* as the final goal is to cease being a startup, by quickly scaling-up to a large business or by failing and moving to other opportunities

Start up Definition with focus on “resource”

The creator of the Lean Startup methodology, Eric Ries, shifts the focus on the human component. According to Ries a startup is a “human institution designed to deliver a new product or service under conditions of extreme uncertainty” (Ries, 2011 p.27). Hence, there seems to be clear that the emphasis is placed on the term "human institution". More precisely, starting from this definition it is possible to

identify the startup with what it does, referring to its product or service, forgetting that part of its value is in its organizational culture, which is a core element of all great ex-startups.

Startups are experiments on platforms, that test possible automatizations both in business and in daily life. Startups tend to apply known techniques to new processes. Success and failure reasons depend on many different and combined elements (The Economist, 2014). In fact, Marmer et al claims that startups must develop *a 5 week strategy* to offer a product or service designed to satisfy user needs and that startups are continuously developing organizations, operating along 5 interdependent areas: customer, product, team, business model and financials (Marmer, Herrmann, Dogrultan, & Berman, 2012).

Start up Definition with focus on "relations between the environment and high risk"

During last years much attention has been paid to studying causes and external factors that determine and influence the birth of start-ups (Sorrentino M., 2003) but also and above all the "post-entry" trend of start-ups, i.e., the results achieved or achievable by new companies that use and exploit innovation and technologies (Decker et al., 2016)

In Italy, scholars and practitioners increasingly consider the phenomenon of start-up companies as a solution to the many problems of economic decline and unemployment (Matricano, 2019).

Analyzing the external factors that influence the birth and life of start-ups, we cannot refer to the definitions of Inherent Inherent high risk". Innovation may result in outperformance and high economic returns. The context of extreme uncertainty in which innovation develops and startups grow cannot be clearly framed and high risk is involved (Ries, 2010)

Paul Graham, an American essayist, developer, startup founder and CEO of Y Combinator, one of the most powerful startup accelerators, considers *rapid growth possible only if a company makes something a wide range of people want, which is*

able to reach and serve all the big market. The difference between a start-up and a small business is the fast growth and business scalability of the former (Graham, 2012).

The point of reference for the emergency conditions is that the true startup does not copy, does not make a script, but does something really new and then compares with conditions of uncertainty, because it goes where nobody is ever before. (Greco, Capobianco, 2017).

2.3 The legislative framework in Italy: *"Start-up Innovativa"*

In 2012, the D.L. 179/2012 introduced some specific measures to support this type of business to support them during their life cycle (birth, growth, maturity). With this package, in addition to developing a dynamic and competitive innovation ecosystem, creating new opportunities for doing business and encouraging employment, we want to promote a sustainable growth strategy.

Companies in possession of the requirements can access the status of innovative startup through self-certification signed by the legal representative and enjoy the benefits by registering in the special section of the Register of Companies at the Chamber of Commerce of their province.

Innovative startups can enjoy the expected benefits within 5 years of their establishment; after this period of time they have the opportunity to become innovative SMEs, without losing the available benefits

Pursuant to the relevant legislation (Legislative Decree 179/2012, art.25, paragraph 2) an innovative startup is a joint stock company, also established in a cooperative form, which complies with the following objective requirements: (Mise 2021)

- new company or established for no more than 5 years;
- it has a residence in Italy, or in another country of the European Economic Area but with a production site or branch in Italy;
- it has an annual turnover of less than 5 million euros;

it is not listed on a regulated market or on a multilateral trading platform;

it does not distribute and has not distributed profits;

it has as its exclusive or prevailing corporate purpose the development, production and marketing of a product or service with a high technological value;

it is not the result of a merger, spin-off or sale of a business unit;

Finally, a startup is innovative if it meets at least 1 of the following 3 subjective requirements:

1. incurs R&D and innovation expenses equal to at least 15% of the higher value between turnover and cost of production;

2. employs highly qualified personnel (at least 1/3 PhDs, PhD students or researchers, or at least 2/3 with master's degrees);

3. is the owner, custodian or licensee of at least one patent or owner of a registered software.

Below is the series of concessions provided for by Italian law for companies that manage to achieve special registration with the Italian business director. (Registro delle imprese, 2021).

The measures apply to innovative startups starting from the date of registration in the special section and for a maximum of 5 years from their date of establishment.

Furthermore, with the decree-law of 19 May 2020, n. 34 (so-called "Relaunch" Decree) measures were introduced to strengthen and support the ecosystem of innovative startups.

The list of concessions dedicated to innovative startups is presented below.

- Digital and free constitution of the startup
- Tax incentives for investment in the capital of innovative startups
- Free and simplified access to the Guarantee Fund for SMEs
- Smart & start Italy (subsidized loans for innovative startups located on the national territory)
- Seamless transformation into innovative SMEs
- Exemption from chamber rights and stamp duties
- Raising capital through equity crowdfunding campaigns
- Business internationalization services (ICE)
- Exceptions to ordinary corporate regulations

- Discipline of flexible work
- Extension of the deadline for covering losses
- Derogation from the regulation on shell companies and systematic loss companies
- Remuneration through equity participation instruments
- Exemption from the obligation to affix the compliance visa for offsetting VAT credits
- Fail Fast (simplified procedures in case of failure of your business)

Chapter 3 Support factors: start-up business accelerators and incubators

The phenomenon of start-up business accelerators and incubators is a recent trend in the field of entrepreneurship.

Around the world, business incubators and accelerators play a pivotal role in the development of innovative solutions to the technological, economic, and social challenges of the 21st century

This phenomenon certainly has an impact on the economy, on the politics of countries and therefore also on the academic world.

Only recently have scientific studies been focusing on this issue.

The existing literature on business incubators focuses mainly on technology transfer and on the possibility that start-ups have to draw on resources of various kinds through accelerators. Little literature provides insights on how to interpret the phenomenon of business accelerators and incubators at 360 degrees-view.

This justifies the need for an in-depth analysis of how accelerators and incubators act to support start-ups.

This chapter aims to contribute to this discussion by mapping current research and definitions of the acceleration phenomenon and enriching the existing literature by studying and describing a number of characteristics of accelerators and incubators of recent years and suggesting potential lines of investigation to be deployed. in the next years.

3.1 The origins of support programs for new businesses

Starting in the forties, with the introduction of the concept of creative destruction by Schumpeter, has gradually established and strengthened over time the conceptual link that links innovation to the creation of new businesses and economic growth. The concept of supporting and encouraging the birth of new innovative companies

is therefore increasingly accepted. (Bruneel et al. 2012)

As we said, the phenomenon of business incubators and start-ups is today as never in the past under the attention of public opinion and national governments. With reference to this statement, consider the Startup America1 initiative, a program promoted by the Obama government last January aimed at encouraging the American private sector to invest in start-up companies and small businesses in general. The main actions introduced by the program are the establishment of a two billion dollar fund (distributed over five years) to support the birth of new entrepreneurial activities, the abolition of the capital gain tax for small businesses, the speeding up of procedures for the registration of patents. (Whitehouse Website 2019).

According to the National Business Incubator Association (NBIA 2006), the first example of a business incubator dates back to 1959 in the city of Batavia, New York state. As specified in the NBIA report, the Batavia Industrial Center represented the first attempt to provide assistance services to newly founded companies, through the provision of shared services (NBIA 2006)

In the United States the phenomenon of incubators began to have a real significance only towards the end of the 1970s (Knopp 2007).

From those years onwards, similar projects were also created within the European Union, with a growing awareness of how this instrument could represent a concrete contribution to regional economic development.

Often when we talk about incubators we refer to both accelerators and business incubators although, as we will see later, they are not the same thing.

The first concept of £accelerator£ was originally created in Boston and Silicon Valley in 2005 by Paul Graham, former entrepreneur transformed into angel investor. With a very similar profile, the second accelerator (Tech Stars) was formed in 2007 in Boulder by Brad Feld and David Cohen, with an aim to promote local development in their region while supporting startups in a more active (“hands-on”) manner. These two accelerators quickly became benchmarks to be followed,

inspiring hundreds of similar programs worldwide (Salido, Sabás, Freixas, 2013)

In 2012 NBIA estimated the existence of about 1250 business incubators in the United States and a total of 7000 facilities in the world7 (data NBIA October 2012)

UBI Global World Rankings of Business Incubators and Accelerators in 2020 made a classification and an analyse studying 364 incubation programs that participated in the World Benchmark 2019-2020.

3.2 Current Scenario: UBI Global World Rankings of Business Incubators and Accelerators

“Word ranking 2019/20 by UBI Global” is the most important international organization on the benchmarking of incubation and acceleration programs

UBI Global is a Swedish research company specializing in offering research services. match-marking, ranking and benchmarking for corporatioins and incubators.

The reasearh focused on 1580 initiatives from all over the world including incubators and accelerators. 591 those who responded to the audit and only 364 programs from 78 countries were included in the ranking.

The subjects assessed were classified into incubators and accelerators and distinguished between university initiatives, initiatives managed by companies and the Public Administration. This has led to the following categories:

- “University” Business incubator/ accelerator that derives its business objectives primarily from one or more universities, by which it is o en operated and primarily nanced.
- “Public” Business incubator/ accelerator that derives its business objectives primarily from one or more public entities by which it is o en operated and primarily nanced.
- “Private” Business incubator/ accelerator that develops its business

objectives largely independently, o en operates autonomously and primarily nances its own operations.

- "Corporate" Business incubator/ accelerator that derives its business objectives primarily from one or more for-pro t corporations, by which it is o en operated and primarily nanced.

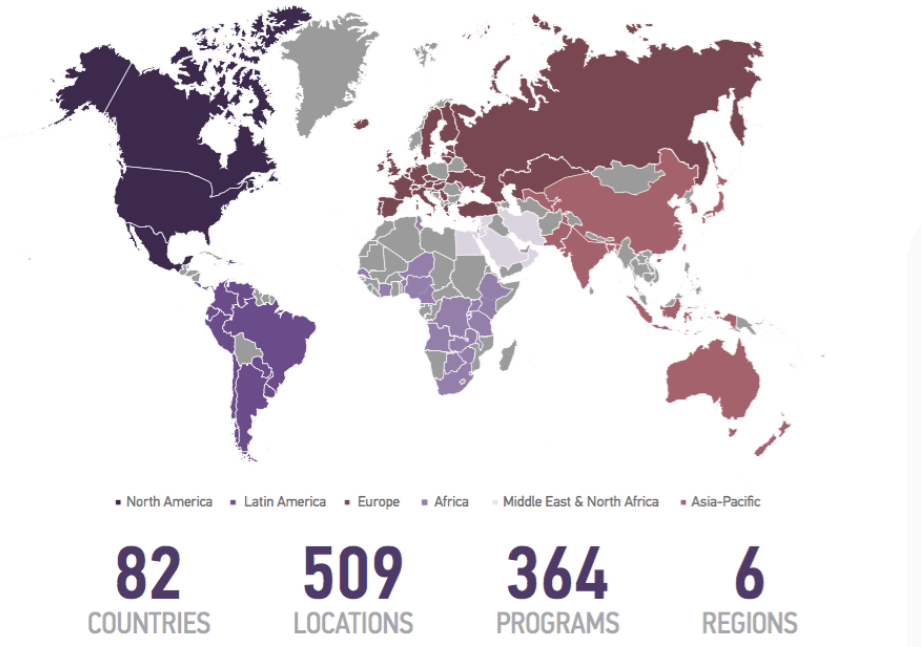


Fig 6 Map of the main UBI global Ranking incubators and accelerators

Below are the KPIs form the base of the seven subcategory scores, which in turn form the scores in the following three main categories used to calculate the individual Program Impact and Performance Scores (PIPS) for all benchmarked incubators and accelerators:

VALUE FOR ECOSYSTEM : economic impact generated for the reference ecosystem: number of incubated startups, startup turnover, jobs, loans obtained

VALUE FOR CLIENT STARTUPS: advantages obtained by incubated startups: quantity and quality of services offered to startups, number of relationships with companies, universities, financiers;

VALUE FOR PROGRAM: validity of the program and ability to attract financial

support: number of ideas evaluated, growth rate and survival of startups, number of incubator partners

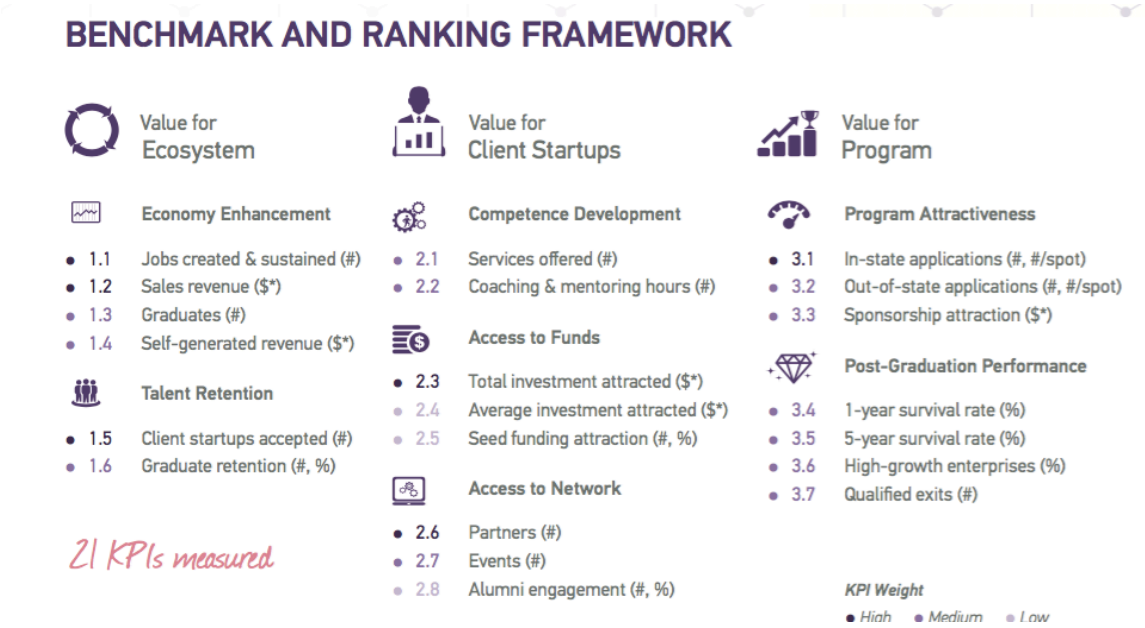


Fig 7 Framework for the evaluation for the world ranking of start-up incubators.

Through this evaluation, UBI GLOBAL has drawn up 4 rankings highlighting the best performers through a top 5 for each classic:

World Top 5 University Business Incubators;

World Top 5 University Busines Accelerators;

World Top 5 Public Business Incubators;

World Top 5 Public Business Acceleretors

World Top 5 Private Business Incubators;

World top 5 Private Business Acceleretors;

<u>World Top 5 University Business Incubators</u>

Program Name	Country
The DMZ at Ryerson University Ryerson University	CANADA
İTÜ Çekirdek İTÜ Çekirdek INSTABUL Tech University	Turkey
PoliHub - Innovation District & Startup Accelerator POLITECNICO DI Milano	Italy
The SETsquared Partnership University of Bath, University of Bristol, University of Exeter, University of Southampton, University of Surrey	United Kingdom
YES!Del Delf University	Netherlands

World Top 5 University Business Accelerators

Program Name	Country
Aalto Startup Center's Business Generator Aalto University	Finland
IMec Universiteit Amsterdam, Hasselt University	Belgium

HSE Business Incubator NAtionl Research University	Russia
Startup Aggieland Texas A&M University, Blinn College District	United States
York Entrepreneurship Development Institute (YEDI) York University	 Canada

World Top 5 Public Business Incubators

Program Name	Country
Beijin Zhonggguanchu	China
ETC Baltimore	United States
I3P - Incubatore delle Imprese Innovative del Politecnico di Torino	Italy
I3P - Incubatore delle Imprese Innovative del Politecnico di Torino	France

World Top 5 Public Business Acceleretors

Program Name	Country
EIT Digital Accelerator	Europe
GenerationS Corporate Accelerator by RVC JSC	Russia
ISDI Accelerator (formerly IMPACT Accelerator)	Spain
Kerala Startup Mission	India
NDRC	Ireland

World Top 5 Private Business Incubators

Program Name	Country
IE Orchard National Incubator	China

MIDITEC	Brazil
Royal Scienti c Society - iPARK	Jordan

World top 5 Private Business Acceleretors;

Program Name	Country
365x	Israele
The Accelerator Centre	Canada
Chinaccelerator	China
GVA Accelerator Program	Russia

SEED SPOT	United States

In reference to the Italian ecosystem there are some observations to report:
The Polihub of the Politecnico di Milano was included in the broadest and most competitive category, that of university incubators, made up of 148 programs from 45 countries, with a weight of more than 40% of the sample. The Program won a respectable place in the top 5 of university incubators, a title that is reconfirmed for the third consecutive year. At Polihub, the jury awarded very high scores with respect to the value and impacts generated by the startups incubated in the entrepreneurial ecosystem.

I3P, the innovative business incubator of the Politecnico of Turin, has been recognized as the best public university incubator on a global scale. the recognition, now in the twentieth year of the foundation, attested the highest level of performance with respect to parameters such as: the size of the portfolio of stratups accepted and business plans followed, the attractiveness of startups in terms of fund raising and the value produced on the ecosystem within which the incubator moves. A success, that of I3P, closely connected to the continuous interaction with the Polytechnic of Turin, not only a basin of technical and scientific skills for the growth of incubated startups, but also a gateway to highly qualified human resources. Specifically, the startups supported by I3P have raised a total of 13 million euros in seed and early investments, reaching approximately 90 million euros of aggregate postmoney value.

3.3 A systematization of the literature review on business incubators and accelerators

Many scholars have focused their efforts on investigating the importance and effectiveness of incubators and accelerators on the development and success of start-up companies. Although the majority of the academic literature seems to agree on the usefulness of business incubators in increasing the probability of success of

incubated companies (Aernout 2004, Scillitoe and Chakrabarti 2010, Bruneel et al. 2012), there are other scholars who is opposed. The latter express some doubts regarding the contribution of these structures. Schwartz (2008), for example, in his studies focuses attention on comparisons of the mortality and survival rates of incubated start-ups and non-incubated companies.

Schwartz shows that more than a third of start-ups that come out of incubators fail within the first three years of autonomy. He also argues that in these cases the incubator essentially contributes to "keeping alive" a company that, under normal market conditions, would fail.

The aim of this literature review is not to show which scholars agree with accelerator programs and which ones are not. This study starts from the assumption "there are not two incubators with the same characteristics" and that it is therefore important to systematize the various contributions on incubators and accelerators to arrive at reflections on how to support some of these compared to others.

We chose two types of criteria for the above literature review. The first adopts a temporal criterion, the second following The roles of accelerators according to the three perspectives in the startup ecosystem literature i.e. Actors, Geographical context and resources. We will carry out this second step of the literature review in chapter 4 because it will focus on university incubators and accelerators and therefore in the chapter of this thesis in which the relationships between institutions and start-up ecosystems are described.

Finally we propose (in both chapters both in this one and in chapter 4 on institutions) a table with a Summary of Existing main Literature on Accelerators

Following the temporal logic, I will start from the assumptions of Bruneel which classifies the first, second and third generation incubators with reference to the evolution of the functions they perform. (Bruneel et al., 2012).

According to this author, those of the first generation are limited to offering shared spaces and resources (spaces to be used as offices and shared resources, meeting rooms, reception, basic accounting services and, in some cases, spaces to be used as

a laboratory / research) with the possibility of obtaining economies of scale and cost savings. Those of the second generation (late nineties) also deal with management consulting (coaching and training) offering mentorship, coaching and training activities. So, there was therefore a sort of evolution in the value proposition of incubators through the integration of "knowledge based" services: assistance in business planning, organizational, managerial and market consultancy

While those of the third (2000's) would be the most advanced with a support capable of facilitating access to the external network (technological, financial, professional)

In this period, the importance of networking emerges as a tool capable of increasing the development possibilities of incubated start-ups. Exploiting networking (Mele, Russo Spena, 2019) relationships means providing start-ups with "preferential channels" through which to communicate with potential customers, suppliers, strategic partners but above all investors.

"*Third generation BIs' tenants are younger, smaller and have shorter incubation periods than tenants housed in first and second generation BIs. [...] third generation BIs are more focused on starting up companies, shown by the higher number of companies established within the BI; first and second generation BIs have a significantly higher number of relocated companies*". (Bruneel et al. 2012, p. 119)

In fact, the theoretical contributions that follow actually reflect this development over time in incubators.

- ✓ The incubation processes of new businesses are carried out by the "Science Parks" which allow companies to access, in a shared way, new technologies and new innovations so as to more easily create value for the territory in which they are established (Felsenstein, 1994, Vedovello 1997)

- ✓ Aernoudt (2004, p. 127) – "*An interactive development process where the aim is to encourage people to start their own business and to support start-up companies in the development of innovative products. (...) Besides*

accommodation, an incubator should offer services such as hands-on management, access to finance (mainly through links with seed capital funds or business angels), legal advice, operational know-how and access to new markets".

- ✓ Peters, Rice, Sundararajan (2004, p. 85) – "Business incubator's role is to provide support environment for start-up and fledgling companies, thereby promoting local job creation, economic development, and technology transfer".

- ✓ Ciappei et al group incubators into two macro categories: non-profit and profit-oriented ones. The non-profit category includes science and technology parks, business innovation centers and university incubators. The corporate business incubators and independent private incubators belong to the profit oriented category (Ciappei et al. 2016)

- ✓ Soetanto, Jack (2011, p. 16) – "*Today, BIs are perceived more as intermediary organizations that support firms by helping them establish and develop networks with a broad range of economic actors. In doing so, BIs continue to play a fundamental support role because they provide a facility where the personnel of incubator firms can come together, interact and mobilise resources*".

- ✓ Cohen (2013) used multiple case studies of nine accelerators in the US to assess how organizational learning occurs and accelerate new ventures creation in such time- compressed programs. Among the key findings in this work, the author highlights the importance of four components in the learning / new venture creation process in accelerators: (i) mentor overload, (ii) accelerator director expertise, (iii) learning in divided teams and (iv) cohort

peers learning. The results suggest that time compression enhances learning (contrary to previous theoretical predictions), firms delay "doing" until strategy emerges and begins to stabilize, teams dividing each member's area of expertise enhance overall organizational learning, ventures accelerated in the same cohort (regardless of any industry focus) improve their aspirational goals and expand founders' overall capabilities and knowledge, and finally it suggests that concentration of expertise among focal firms matters, in particular the knowledge transfer by accelerator directors to startups.

- ✓ Cohen and Hochberg (2014) provide a first attempt to define not only what an incubator or accelerator is but more specifically what an acceleration program is, highlighting the difference between other programs intended to support startups.

- ✓ Dee et al. (2015) present a literature review focused on a classification of acceleration programs based on different criteria i.e. how the programs are funded, at what stage the programs intervene in the startup training process.

Author	**Research Question**	**Methodology**	**Findings**
Arenout 2004	among the different forms of support which of these should a start-up accelerator offer more?	studies	Depending on the market conditions and the context in which they are inserted, an accelerator should offer ways to access new markets
Bruneel 2012	what evolution of functions have the accelerators of start-up companies had over time?	data collected within seven BIs and their tenants regarding service provision and selection criteria.	indings show that whilst BIs of all generations offer similar support services, tenants in older generation BIs make less use of the BI's service portfolio.

Ciappei 2006	What are Profit e no profit incubetors .	Case Studies	All types of incubators, both profit and non-profit, make use of new technological innovations to increase territorial development
Choen 2014	How firms can accelerate learning? And broadly, how entrepreneurship can be taught?	Qualitative multiple case studies of nine accelerators in the US to assess how organizational learning occurs and accelerate new ventures creation in such time-compressed programs.	Accelerator programs do accelerate startups earning through four major components – (i) mentor expertise transfer overload, (ii) accelerator director expertise transfer, (iii) learning through divided teams, and (iv) learning through cohort peers.
Dee 2015	How do support programs fulfill different roles for startups within startup ecosystems	Qualitative - semi–structured interviews 50+ interviews with a range of 'startup support programs' in Europe and Israel	map the startup ecosystem (particularly in Europe) and, finally, the results suggest there are links between how developed a startup ecosystem is and the ability of programs to be successful.
Soetanto, Jack (2011	the importance and effectiveness of incubators and accelerators on the development		

	and success of start-up companies.		

Tab 2 Summary of main conceptualization of Existing Literature

3.4 How accelerators work.

Many, both scholars and practitioners, have provided classifications of start-up business incubators and accelerators based on different aspects. (Choen 2014, Ciappei 2006, Bruneel 2012, Grimaldi and Grandi 2005, Aernoudt 2004).

The intent of this paragraph is to distinguish, certainly, the concept of incubator from that of accelerator but also to provide our classification based on the operating models of the latter.

The models of modern incubators and accelerators differ from each other for the work flow and above all because they have practically different objectives.

In line with the classification proposed many years ago by Arnoudt (2004), our classification is based precisely on three main objectives:

a) *support start-ups to participate in future economic results*

b) *diffusion of innovation and the new entrepreneurial culture and in regional and local ecosystems*

c) *support start-ups for the Integration of social categories***.**

(A)- The typical incubator / accelerators with this goal is the Private Incubator.

In this case, the business model consists in the creation and rapid development of small businesses arising from entrepreneurial ideas. In exchange for the services provided to the incubated companies (from the conception to the validation of the business model, the assistance of expert management, the provision of basic services

such as PR, HR, legal advice, inclusion in contact networks) the incubator obtains a participation in the capital of the start-up. Broadly speaking, it is possible to identify 2 types of Private Incubators: Corporate Business Incubators (CBI) and Independent Business Incubators (IBI). The substantial difference is the fact that the former are internal realities of large companies that choose this configuration to manage research and development projects, and in some cases give rise to spin-offs, or projects that arise from corporate resources (financial but above all know-how) and end up becoming independent entities that help diversify the corporate strategy.

As for IBIs, they are normal investment fund companies providing small amounts of venture capital to start-ups looking for seed funds, assisting their development through a variety of services, contributing to their development since the foundation of the company. company up, sometimes, to listing on the stock exchange. In essence, these are a mere financial instrument and more frequently their intervention is exhausted when other types of lenders come into play.

Knopp (2007) proposes for summary purposes an indicative list of the main types of services provided by the typical private business incubator.

- Access to Angel Investors and Venture Capital
- High-speed Internet access
- Marketing and business planning assistance
- Assistance in the marketing of technology
- Assistance in training the management team
- Networking activities
- Links to strategic partners
- Management of intellectual property
- Coaching and improvement of presentation techniques
- Accounting, financial management and legal assistance services

(B)- The second type of incubator identified is that relating to University Business Incubators (UBI) wich have like main goals the diffusion of innovation and the new entrepreneurial culture and in regional and local ecosystems.

These types of incubators are usually public structures where the University is often a member of the organization or in any case are highly integrated with universities.

One of the first contributions on UBAs framed them – as well as university-based incubators – as entities supporting "entrepreneurial teams during the early stage" (Stayton and Mangematin, 2016); a restrictive approach on UBAs was preferred by Bretznitz and Zhang (2019), who described them as an organization supporting firms' growth with specific reference to "graduates' development as entrepreneurs" (p. 868).

Generally speaking, UBAs are part of a regional entrepreneurial ecosystem, besides often being connected to time-limited programs (Mansoori et al., 2019).

The focus of the latter is mainly concentrated on the transmission of technological knowledge to companies, favoring eg. academic spin offs.

In this case, university incubators pursue the aforementioned objectives through an action in particular: or the reduction in the reduction of the "discovery gap" (Mayer et al., 2011), that is, the distance that separates a scientific discovery from its application on the market. the technologies developed here are used as new businesses or are limited to the commercial exploitation of discoveries through royalties generated by licenses.

The services that these structures provide are essentially of 2 types: services typical of incubators and services relating to the world of university research. Private incubator and UBI, despite the support they have always received from European governments, have often been criticized as their respective results are not immediately measurable. (Grimaldi and Gandi 2005)

In the next chapter, when we address the issue of the influence of institutions on the start-up ecosystem, we will focus in particular on the role of the university and therefore of university incubators.

(C)- The typical incubator / accelerators with this lat goal - c - is the Social Incubator.

The objective of the first is to reduce the social gap through actions aimed at facilitating the employment of less qualified people or those who have greater difficulties in finding a job (disabled, unskilled workers, long-term unemployed, etc. So this last type of incubation path identified aims at the integration of social categories and at employement creation (Arnoudt, 2004)

In most cases this type of incubator supports non-profit initiatives or start-ups in the field of social innovation.

Types/Mission-Objectives-Functions	**Mission**	**Main Goals**	**Sector Involved**
Private Incubator	ROI	Create Succesfull Start-ups	All sector
Univeristy Incubator	Disseminating entrepreneurial culture at the local level and optimizing the discovery gap	spin offs and technology transfer	Above Hi-Tech
Social Incubator	Social Gap	Integretion of social categories and Employment creation	No profit sector/ Social innovation
Mixed Incubator	a mix of the elements mentioned	a mix of the goals mentioned	All sector

Tab 3 Re-elaboration of the Arnoudt 2004 table relating to the classes of incubators and related areas of activity, functions and objectives

3.4.1 Analyzing the differences between start up incubator and start up accelerator

Many, both practitioners and scholars, use the terms incubator and accelerator as if they were synonyms. On the surface, the two realities may seem very similar and in this work we too have often referred to them with the same term "incubators" but in reality they hide differences between the two terms, especially with the spread of the phenomenon.

Several entrepreneurship scholars have focused on the differences between the two realities (Cohen 2013, Sepulveda F. 2012, Isabelle D. 2013, Huijgevoort T.V. 2012)

The most important certainly concerns the type of companies that become part of the incubator and accelerator and the stage in which these occur.. The incubator is aimed at startups that in many cases are not yet born or are in an early stage which can only be accessed with the presentation of a good idea. On the accelerator, on the other hand, startups that have already started and need a boost to continue to grow enter the accelerator. And in this last case, the selection is much more competitive.

"*Incubators tend to nurture nascent ventures by buffering them from the environment to give them room to grow. In contrast, whereas accelerators speed up market interactions in order to help nascent ventures adapt quickly and learn*" (Choen 2014 p.21).

In particular according to Cohen (2014) accelerators and incubators differ in four key ways:

- Duration: Duration is the feature that most clearly distinguishes acceleration programs from incubation programs. The acceleration path is usually 3 months.

  Research on incubators suggests that companies graduate from incubators one to five years after inception;

1) Relationship of "cohorts"; Different relationships arise between the founders of the start-ups and the members of the accelerator or incubator (The Cohort).

   Accelerator members and start-up founders (often belonging to investment funds) become very close by helping and motivating each other during the program, almost as if they were colleagues from the same company.

   In different ways, incubator members can also develop relationships, the experience of starting the program at the same time fosters unusually strong bonds and feelings and a common identity among the founders.

   Susan Choen asked the founders of the company what their relationships were with the other members of their cohort. One said they would do "*anything for those guys*".

2) Business Model: Most of the original accelerators are privately owned and take an equity stake in the initiatives that participate in the programs. Additionally, some accelerator managers are also active angel investors who provide additional funding to some of the ventures, either directly or through a fund.

   Incubators, on the other hand, are mostly publicly owned, managed by managers and generally do not have their own investment funds.

   This implies that the managers of accelerators who are also the investors in the companies they are helping are more incentivized and aligned to the initiatives than are the managers of professional incubators.

   Additionally, some accelerator owners have extensive previous experience as an entrepreneur or angel investor, giving them firsthand experience to startupper founder.

   "Accelerators want growth that leads to a positive exit, while the best outcome for an incubator may be slower growth, which delays graduation and prolongs the tenant status of the firm." (Cohen 2014 p 22)

Selection: The start-up selection process is another important difference between incubators and accelerators.

Accelerators select startups in batches, usually once or twice a year, while incubators accept new initiatives all the time.

The sales metrics and the product development stage must be in an advanced state for accelerators, while earlier stages are fine for incubators.

In addition to the three key differences identified by Choen, we also consider it important to detect and add a very important difference feature such as that of the Training and Mentorship process which in the incubator is generic and basic support while in the business accelerator they are made available to mentorship courses and the assistance of specialized tutors.

3.5 Start up Valuation

The start-up evaluation issue is a very popular topic in this historical moment.

Having a founder clear what a start-up is worth is a fundamental condition for several objectives

In the context of this Phd thesis, the importance of having a clear idea with respect to the evaluation of the start-up is undoubtedly related to the fundraising activity.

The author of this research thesis is not only a Phd Student in Management, Federico II of Naples is also the CEO and Founder of a food delivery Premium start-up named Jafood. Jafood was incubated by the Federico II Campania New steel university incubator. For this reason, the author, together with his colleagues, have asked each other the following questions several times:

How much are the shares of my start up worth at this very moment? So how much capital do investors of different nature who want to enter the cape table have to invest in the start-up?

The evaluation of its start-up is a very delicate matter even in the moment of the

foundation of the same start-up and then by the passage from the business idea to the early stages of execution. Start-ups that present themselves to acceleration and incubation programs with completely unbalanced and difficult to fix cap tables before introducing new members are not isolated cases. (Greco F, 2021, webinar Federico II Start up Valuation, , Microsoft Teams)

Helping start-up founders to have a clear idea of the value of their start-up is a support that incubators, key players in today's start-up ecosystems, should absolutely provide.

The finance literature offers many suggested methods to estimate the value of a start-up:

There are economic methods that correspond to Valuation methods that infer the value of the company's economic capital from the presumed value assigned to the expected company profits (O. Paganelli, 1990). These methods, in essence, calculate the economic capital according to the company's income capacity (G. Zanda, M. Lacchini, 2013)

After that, there are equity valuation methods which are based on the principle of analytical valuation of the individual elements of the assets and liabilities that make up the capital (L. Guatri, 1990). These systems therefore identify the value of the company in the book equity, obtained from the difference between the assets and liabilities of the company capital.

Finally, there are the most modern and transversal financial methods using a multiplicity of factors that are not tangible but also intangible for the evaluation of the value of start-ups such as that of the Score Card Method. (Pyne B., 2019)

The latter appears to be a qualitative assessment method and is therefore considered more complete than the previous ones.

The scorecard method compares the target company to typical angel-funded startup ventures and adjusts the average valuation of recently funded companies in the region to establish a pre-money valuation of the target.

Such comparisons can only be made for companies at the same stage of development,

in this case, for pre-revenue startup ventures.

“The Score Card Method is also very "simple to use and particularly suitable for start-ups in the early stage where making evaluations can be very risky" (De Caro G., 2021, Webinar Start up Valuation University Federico II of Naples)

Banca Intesa San Paolo uses the Score Card Method to evaluate projects and the factors that it takes into consideration and which it measures through a score for each single item are the following:

1. Team: competence and adequacy
2. Value Proposition: product / service potential offered, technology used, project feasibility, execution capacity
3. Market Opportunity: Originality, Tam / Sam / Som
4. Competition: direct and indirect competitors
5. Buisness Pitch and Stage of development: Maturity, traction, Metrics
6. Investment requirements: Sustainability, use of the funds raised (Gruppointesasanpaolo.com)

From the aforementioned description of the evaluation methods of a start-up it is clear that there are many factors that must be taken into consideration when estimating the value of a start-up. What stands out is that the classical methods pay much attention to tangible elements and little to intangible elements, on the contrary more modern and transversal methods give a lot of importance to intangible elements.

In this regard, it is important to refer to the concept of "human capital".

From several studies emerges the critical role of the composition of the team of founders in the possibility of acquiring investments (Myzuka, L. Benoit, 1996). In particular, following an analysis of the criteria used by some ventures

US capitalists in the selection of investments, it can be said that the creation of a balanced team, or rather heterogeneous in its composition (Vanaelst, 2006)

By heterogeneity of the team we mean, in this case, subjects who have different skills

to deal with each of different functions. This makes the degree of execution certainly more performing and achievable

3.6 The fundraising: stages of start-up financing.

In this paragraph we will observe the various phases of financing that are of vital importance for the growth of start-ups and which are linked to their own to the succession of the evolution of the latter (Capizzi 2009, Grham 2015, Calopa M.K. 2014). When we talk about start-up financing we refer, in most cases, to risk capital and not to debt capital. The first refers to the capital (generally money, but, if necessary, it could also be constituted by the conferment of services or work for equity) that is conferred by an actor external to the start-up and thanks to which this third party will join of the shareholder structure (that is to say that he will become your partner) and, therefore, will participate in the business risk and in future economic results. The second, the debt capital, simply consists of a sum of money that a person or a financial institution pays into the current account in the name of the Startup, which must return it within a predetermined date although, sometimes, benefiting from favorable conditions of return.

For each of the financing phases we observe, in parallel, different figures of investor actors that we will deepen below.

*"Venture funding works like gears. A typical startup goes through several rounds of funding, and at each round you want to take just enough money to reach the speed where you can shift into the next gear." (*Graham P., 2005)

IDEA/CO-FOUNDER STAGE

"…At first it is just you. You are pretty brilliant, and out of the many ideas you have had, you finally decide that this is the one…. As you start to transform your idea into a physical prototype you realize that could really use another person's" skills. So you look for a co-founder But you can't pay her any money " (Grahm P., 2005)

This is the phase in which everything is done to pass as quickly as possible from the

idea to the execution and therefore surrounds oneself with co-founders who, rather than being in possession of monetary resources, have skills to reduce the "time to marke" as much as possible. "

At this precise stage, there is still no focus on financial needs

The transition from the Idea to the execution is a very important phase. Many potential startuppers have had formidable ideas but have not had the ability to implement them. It is inevitable to refer to Thomas Edinson (1903) American inventor, entrepreneur and economist of the early 1900s when he said "Genius is one per cent inspiration and ninety-nine per cent *perspiration*". His popular aphorism evolved over time.

FAMILY FRIENDS

The so-called "Family Friends" phase is that phase in which even if your family and friends or people close to the founders' network are not as rich as a professional investor, they can still finance the business in their own small way and become part of the project.

The first raised money will allow the founders to be able to activate the first construction attempts in the prototype of the project and to implement at least the alpha phase which will test the same friends and family all together within their.

"You give him 5% of the company in exchange for $15,000 cash. Now you can afford room and ramen for another 6 months while building your prototype."

PRE SEED/SEED FINANCING

In this phase, the start-ups implement what is called an MVP - Minimum Viable Product – (Taibi 2016, Lenarduzzi, 2016. Gelvet et .al 2017). A tool halfway between the product prototype and a marketing analysis that consists in creating the basic version of the project, without the most advanced features, while maintaining the essential ones, a Beta phase practically.

We can already stop calling it a finance idea, because here the venture capital investor is already involved

in the experimentation phase,

The technical validity of the product / service being financed has yet to be demonstrated

The validation of the business idea takes place at this stage and the most substantial loans begin to arrive, called Seed Loans. The most used tools to access funds are:

Investment funds that Incubators participate: The structures offer start-ups the first investments, a working environment and the support of professionals who collaborate in the supervision of the project and its validation phase in exchange for company shares

Crowdfunding: bottom-up funding that leverages Internet fundraising. The project is posted on an online platform and, if it reaches the established goal, the person who submitted it receives the sum collected. Among the advantages of this tool is the possibility, through an excellent campaign, to create engagement on the product or service offered.

Crowdfunding is at the same time also a marketing campaign because it gives the opportunity to describe all their projects and everyone can sometimes participate in them with very small investments starting from 250 euros.

Business Angels: informal investors, startup experts who invest relatively low sums (usually not above € 200,000) mainly in sectors such as digital technologies.

During the Seed Stage, therefore, the company is financed without the product or service to be offered having a proven technical validity. This phase, together with the startup phase, is part of the Early Stage.

ROUND Serie A and B

Start-up financing Round A (First stage financing): intervention in the start-up phase

of the activity

productive, when the commercial usefulness of the product / service has yet to be demonstrated.

Also in this case, the problems are essentially of a technical nature, while the characteristics of the operators do not differ substantially from those of the previous case.

Compared to seed financing, however, the experimentation phase has been passed and the product has already been developed, albeit at the prototype level, and the phases relating to

any patents and engineering. Therefore, the prerequisites for starting a business already exist, as formally often the company already exists, the management has already been established, and they are

product tests and appropriate market research have been launched. At this stage, financial resources are also required to support the development of production and other activities

business functions. As in the case of seed capital interventions, even start-up operations are particularly delicate for the future development possibilities of the company, as they will be

necessary operations such as, for example, the launch of new products and useful marketing activities

to make themselves known on the markets by consumers.

• Expansion financing Round B: operation aimed at developing start-ups they have already reached

a certain degree of operational maturity and with production already underway. The development phase will take place through the increase or direct diversification of production capacity. (E. Gualandri, V. Venturelli, 2011)

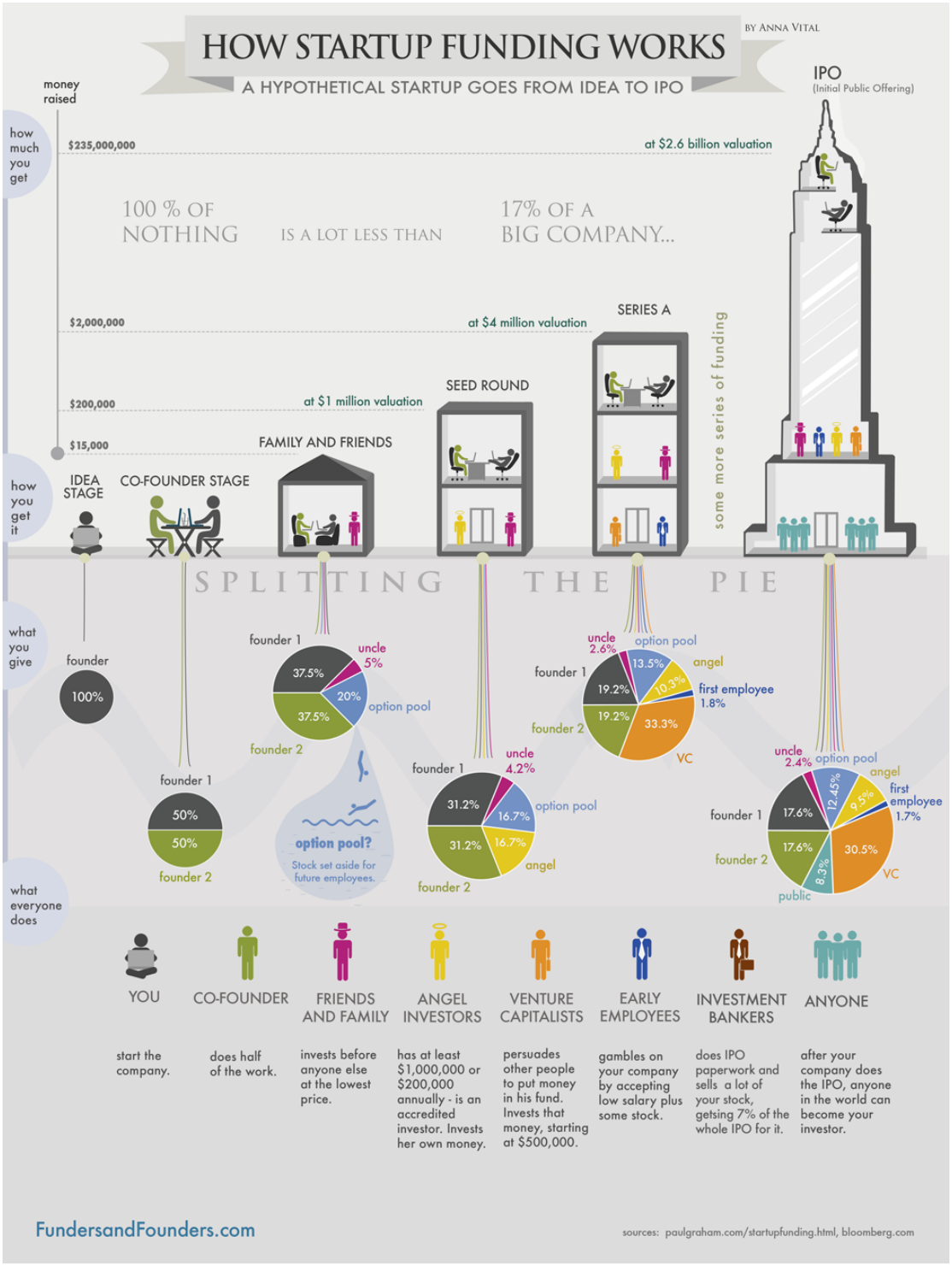


Fig 8: Graphic representation: how Start up Funding Works

CAP 4 Institutions in the start-up ecosystem: universities and early entrepreneurship

The launch and dissemination of a variety of initiatives aimed at encouraging and facilitating the birth and development of new entrepreneurial activities constitutes a significant trend in the economy of many industrialized countries. Such initiatives bring out more than ever before a necessary and continuous effort on the part of subjects such as the state, local administrations, universities and research centers in contributing and facilitating, in the most varied forms, the birth of new businesses and their subsequent development. (Gibson and Smilor 1991)

In this chapter we will address the issue of the role of institutions in the start-up ecosystem, with a focus on the role of universities sullo sviluppo della nuova imprenditorialità in particolare, in riferimento a due fenomeni : the process of incubation and acceleration of new businesses, e gli spinoff accademici.

4.1 – The main institutions in the start up ecosystem: "The innomediary"

Start-up companies constantly deal with innovation (Josh & Satyanarayana, 2014; Bala Subrahmanya, 2017; Fraiberg, 2017) and since they act in a multi-actor context, they are exposed to several innovation carrier, apart from being themselves innovators. Innovation studies focused on agents and parties carrying and sharing knowledge to favour innovation, therefore scholars started proposing the concept of mediated innovation. Firstly, Sawhney et al. (2002) defined the third-party actors acting as mediators who facilitate innovation as "innomediaries". Additionally, they categorized them based on the firms they support and identified three actions, namely connection, recombination, and dissemination of ideas to favour innovation. On the other hand, Vanhaverbeke and Cloodt (2014) framed innomediaries in the paradigm of open innovation; more in detail, they considered the advantages of mediation for innovation as favouring new trajectories of innovation, as well as a way to make innovation-oriented transactions more efficient. Similarly, Vanhaverbeke et al.

(2014) questioned how a firm should be organized to get the most from innomediaries in terms of effectiveness. Further, innomediaries are a new market actor favouring the co-creation of innovation and the research by Mele and Russo-Spena (2015) described their role through a practice-based approach, highlighting engaging, exploring, exploiting, and orchestrating as the ways enabling resource exchange and integration. Engaging is a way to build connections in social networks, while exploring lever on knowledge and creativity in networks. This knowledge is fully exploited in the third practice through modifying and extending solutions, and finally orchestrating is the definition of alignment and linkage of actors to achieve innovation and overcome the contextual divides.

Differently, other authors focused on the main goals of innomediaries, namely problematizing what firms need and open ways to look for a suitable solution in a network of actors (Chen et al., 2016). More recently, Lee (2018) described the increasing relevance of innomediaries due to the wider adoption of open innovation approaches helping firms in finding solutions in an open source environment.

The key institutions of the start-up ecosystems, mentioned above, can be considered innomediary because they have the specific task of intercepting a series of other actors, relationships and innovative tools capable of enhancing the processes of new entrepreneurship by helping the entrepreneur, first of all, to develop disruptive and innovative value propositions, helping them, at the same time, to face the difficulties that characterize the life of start-ups in an early stage and new business creation phase.

Practices	Example 1	Example 2
Engaging	**Silicon Valley:** *Startups have access to talent (Stanford University, UC Berkeley and USCF), capital, plus numerous investors and mentors*	**Stockholm**: *Companies have access to top talent from some of Europe's top ranking universities, such as the Stockholm School of Economics, Karolinska Institutet and Royal Institute of Technology (KTH).*
Exploring	**Seattle:** *Microsoft and Amazon, both head- quartered in the Seattle region, have been the source of numerous spinoff companies directly (such as Expedia). This record has given the region a rich genealogy of startups that become scaleups, be getting more startups.*	**Singapore:** *Singapore is rated as the second best country to conduct business globally. Singapore now recognises engineers are valued and should learn from Silicon Valley's practices*
Exploiting	**Amsterdam:** *Startups can gain access to corporates across every sector. Nearly 200 multinationals have their European headquarters in Amsterdam, including Netflix, Uber, Tesla, and Salesforce.*	**Berlin:** *Berlin is home to more AI companies than any other German ecosystem and involve about 5,000 people.* *But Berlin ecosystem attracts entrepreneurs and talent from all over the world and from different contexts, basing on factors like essentials, openness, and recreation.*
Orchestrating	**Sidney:** *The region's many universities draw tens of thousands of international students, providing a* good *testing ground for Edtech startups. Sydney-based Smart Sparrow, an online learning design platform*	**Singapore**: *Singapore is rated as the second best country to conduct business globally.*

Tab 4 The four practices in the Genome Start-up Ecosystems: some evidences. Own elaboration from multiple sources

4.2 The role of University in the start-up ecosystem

The possibility for Universities to become actors in the economic development of a country through the offer of educational-training activities and technology transfer and through the provision of services to start-up companies, has in recent years grown the interest of many scholars who have concentrated their research on the relationship between these institutions and new entrepreneurship (Van de Velde 2005, Petretto 2007, Fetters et al, 2011)

In the United States, for many years, universities have played an important role in the field of entrepreneurship promotion, focusing in particular efforts on the management of intellectual property in promoting the creation of new businesses through both direct and through spin-off the vehicle of university incubators. For example, Stanford University, more than any other institution, has been considered the engine of the birth and development of the hi-tech economy in California. Before the past decade, Stratford University professors, researchers and students had founded nearly 3,000 companies. Companies such as Sun Microsystem, Cisco Systems, HP (Hawlett Packard), and Google were founded precisely thanks to technological prototypes created by Stratford University (Confindustria, 2009 and Bank of Boston).

A process of evolution oriented in this direction, albeit slowly, is also starting in Italy where, despite a widespread perception of a lack of cooperation between the academic world and the business world, some university institutions are working hard to provide important help to make the a more competitive territorial entrepreneurial reality in the face of the new challenges of global innovations and the unstoppable evolution of technologies.

Since 2000 the Polytechnic of Turin has collaborated with Motoria for applied research projects; the San Raffaele research park in Milan houses a research center of the pharmaceutical company Schering-Plow; since 2006 the University of Trento has hosted some Microsoft offices; in Naples, since 2017, in the San Giovanni pole, Federico II hosts Apple and Deloitte Academy and Deloitte.

"So we can say that the Universities working on education and scientific research

aim at dialogue with the institutions spread across the territory and for this they constitute "a possible engine of economic development for the country and sources of diffusion of entrepreneurship in the reference area" (Petretto 2007 p. 90)

4.2.1 The contribution of universities in early entrepreneurship: resource network, oppurtunity network and legitimation network

In 2001, in a research paper by Abell, Crouncheley and Mills on the description of how some networks are able to stimulate the formation of new entrepreneurship, the authors assert that universities through their role and their activities (teaching programs and research projects) are able to activate three categories of Network that allow a potential entrepreneur to place himself in a system of relationships and in a network that allow him to potential his own chances of success through 4 dimensions in particular

of research

1) **Legimitation Networks:**

   the development of relations between individuals that confer legitimacy aspiring entrepreneur about to launch your new business.

   In particular, the aforementioned legitimation process takes place thank to:

   • The creation of a climate of shared values and principles that favors and legitimizes the spirit of entrepreneurial initiative

- The creation of a climate of shared values and principles that legitimize entrepreneurial action by increasing self-confidence and the awareness of acting in the well-being of the community with the increase in employment and the development of the local economy
- The creation of a climate of shared values and principles that increase the feasibility perception and the real possibility of realization of entrepreneurial projects

- Legitimates and normalizes the psychological needs at the 'basis of the entrepreneurial will' such as the need of achievement

  Just think for example to the institutions of prizes for the best business ideas by universities.

2) Opportunity and Resource Network

We refer to the development of relations between individuals that offer start-ups new market opportunities.

The student, professor or researcher who founds his or her star up within a university context where he can come into contact with actors who may have a "complementarity" in entrepreneurial action, reducing the costs and start-up times of the stat-up. Just think, for example, of the development of computer algorithms born in the computer labs of the university of information engineering or of the possibility that a new graduate in economics has who is starting his start-up to intercept with subjects who usually interact with the teaching and research staff such as ventur capitalist or business angel.

Training activities and university teaching could also be an opportunity in these contexts because they offer the potential entrepreneur the opportunity to access managerial and entrepreneurial skills to be used in a business creation process (Fiet 2001, Vallini and Simoni 2006)

Finally, it is worth mentioning the possibility that the startuppers linked to the universities have to develop new innovations because they are inserted in university technology transfer offices and academic spin-offs. The latter will be explored in the next paragraph (4.4)

Startuppers who carry out their mission in university contexts often also have access to co-working spaces that allow them, on the one hand, to reduce the costs related to office and utility rents, and on the other to activate relationships with from other start-ups, developing exchanges of skills. This is an aspect that at first glance may seem trivial and that is often mistakenly underestimated.

3) Extracurricula Activivites

The term extracurricular activities means those activities offered by universities such as clubs, associations, sporting and cultural organizations, campus events etc... (Petretto, 2007)

These activities have different purposes but they all share the aim of fostering relationships between students, researchers and professors from all over the world.

This is a networking practice (Mele Russo Spena, 2019) widespread much more in the United States than in Europe and certainly in Italy, in particular, the commitment in this sense must be increased.

The importance of these extracurricular activities is evidenced by numerous studies which state that students with the highest spirits of initiative (39 percent) choose universities that offer these types of initiatives on campus. (USnews 2016)

Among these activities, at this point, it is important to focus on associations focused on the specific field of entrepreneurship: Entrepreneur clubs and Entrepreneur associations.

The Entrepreneurial assosaciones are born as organizations interested in promoting interdisciplinary cultural activities on specific aspects of entrepreneurship capable of encouraging the comparison of ideas, research and projects between actors linked to universities.

The most emblematic example is that of the MIT Alumni association, a large community that includes the MIT entreprise Forum, the MIT world (network of aspiring university entrepreneurs between the countries of the USA, Japan, Taiwan, England) and the MIT open course ware (courses educational courses made for professors and students by venture capitalists and presidents of investment funds). (mit.edu)

From the above example we can assert that entrepreneurial education contribute to:

• Create and disseminate entrepreneurial culture

• Facilitate the sharing of ideas and projects

The strong connection with professors and students from all over the world allows potential entrepreneurs to grasp new insights and follow other best practices

• Facilitate the transition between idea and execution of entrepreneurial projects

Very often these types of associations work in close contact with investment funds which, by financing university start-ups, have every interest in their success.

• Allow access to skills, experties and capabilities that are not accessible in other ways

There will be continuous comparisons with experienced entrepreneurs through the organization of workshops, lectures and project work supported by big companies.

All this facilitates and promotes access to experiences and competence.

4.3 – University-based accelerators and incubators, a literature review.

Many scholars that joined the academic debate on startups consider education to be an important element for creating a more prosperous startup ecosystem (Pittaway and Cope, 2007; Blenker et al., 2013; Landström and Harirchi, 2019). Indeed, knowledge is considered a key pillar of a startup ecosystem, by both authors attributing relevance to multiple aspects (e.g., Cukier and Kon, 2018) and authors opting for a focus on resources (e.g., Hemmert et al., 2016).

Several studies (e.g., Petretto, 2008; Tripathi et al., 2018) reported that in areas where entrepreneurs are not educated, they face a series of more difficult challenges and obstacles than usual. One of the reasons for this shortcoming is the lack of soft skills development courses in the school curriculum (Tripathi et al., 2018)

Via a focus on education, this literature domain has regarded universities as enablers of entrepreneurship since the debate on the triple helix began (Etzkowitz and Leydesdorff, 2000). Indeed, the university is an actor connecting industry and government in setting proper grounds for innovation. The Local Innovation System is meant similarly, as universities, as well as other actors from the industrial and political domains, favour mutual learning processes in a geographical area to support new ventures and innovation outcomes (Ferretti and Parmentola, 2015; Ventura et al., 2019). The evolution of the debate over the helices models has led to the consideration of an ecosystem as a helix, due to the advantage involved in combining different knowledge and innovation modes (Carayannis et al., 2018).

One of the first contributions on UBAs framed them – as well as university-based incubators – as entities supporting "entrepreneurial teams during the early stage" (Stayton and Mangematin, 2016: 393); a restrictive approach on UBAs was preferred by Bretznitz and Zhang (2019), who described them as an organization supporting firms' growth with specific reference to "graduates' development as entrepreneurs" (p. 868). In the same vein, Ismail (2020) identified the services offered to students looking for a future as entrepreneurs and in the condition to benefit from the offering of "the unique angle of linking business and entrepreneurial theory and practice" (p.

3). Generally speaking, UBAs are part of a regional entrepreneurial ecosystem, besides often being connected to time-limited programs (Mansoori et al., 2019).

The debate over the role of universities in entrepreneurship and from an ecosystem-oriented perspective bloomed even more when UBAs practically showed their vast capabilities and flourished in various contexts (Stayton and Mangematin, 2019).

Anyway, UBAs are among the most recent advances in this field of study, with few contributions addressing this topic. This review on UBAs consider actors, geographical contexts, and resources as the three main drivers shaping a startup ecosystem and the support it can offer to the startup's growth; therefore, Table 1 briefly summarizes the aforementioned themes in the three perspectives on startup ecosystem literature and infuses them in the debate on accelerators – including UBAs – to advance the understanding of the role of these accelerators. The roles of UBAs will be further detailed in the following sub-sections, each devoted to a different perspective on startups and applied to UBAs.

Perspectives from startups literature	Key themes in each perspective	Roles of accelerators – including UBAs	Main references -
Actors	Dynamicity, openness, renewal mechanisms, relationships among actors, spillovers	UBAs are critical agents favouring startups creation, as well as the growth and continuous reshaping of startup ecosystems; UBAs directors may catalyse processes based on their skills in technology transfers and their experience	Bretznitz and Zhang, 2019; Condom-Vilà, 2020; Hernández & González, 2016; Krajcik & Formanek, 2015; Mansoori et al., 2019; Stayton and Mangematin, 2016.
Geographical context	Local support, regional economics, social and cultural background, context, information environment	UBAs favour agglomeration of local actors properly and efficiently linked to support startups' growth. UBAs act as orchestrators of local actors, thus shaping the context in which startups may proliferate.	Audretsch & Belitski, 2017; Bernhofer & Han, 2014; Cohen, 2006; Cukier et al., 2016; Ismail, 2020; Spigel, 2015.
Resources	Permeability, integration and fluidity, knowledge, risk capital, learning, experience, mentoring	UBAs support startups through direct investments and attraction of multiple key resources. UBAs' financial resources, knowledge, time, and structures are among the factors affecting startups	Baloutsos et al., 2020; Buchnik et al., 2018; Hemmert et al., 2016; Malecki, 2018; Stayton and Mangematin, 2016; Ventura et al., 2019;

Tab. 5 - The roles of accelerators according to the three perspectives in the startup ecosystem literature

4.3.1 The differentiating variables of UBI (University Business Incubator)

In the previous chapter we proposed a classification of incubators and accelerators of start-up companies where the two most common types of incubators and accelerators have emerged, namely traditional business incubators, usually private or even public with the participation of venture funds and UBI, university Business Incubator.

Between the two most common types of incubators there are substantial differences that make university ones unique in their kind.

First of all in the case of traditional BICs, as we have seen above, start-up companies or innovative business projects are selected by the competent incubator from a series of proposals that derive from the external environment, while in the case of UBI the projects of companies are mostly derived from internally academic research results. This represents a substantial difference between BIC and UBI, because the start-ups of the latter will have to compete to a lesser extent with the start-up business market than the BICs, at least in the selection process at the incubation period. In fact, this does not mean that start-ups with a university background will not have to deal with the external market, given that the creation of new business projects implies a transfer of technology and skills to the external market.

There are still other features of the UBI offer typically attributable to university incubation activities:

- the availability of spaces, logistics and secretarial services, basic assistance for business development, access to networks

- specific services for the university environment, including consultancy for university teachers, access to libraries, laboratories and scientific infrastructures, market research activities and technology transfer programs.

- In addition to the availability of specific services and skills of the university environment, a UBI also offers another important component among the variables that characterize university incubation activities: reputation. A company born from an incubator associated with a university esteemed and recognized in the reference community will certainly have advantages, which can refer to the facilitated access to privileged contacts that the university has developed over the years, the affirmation on the market faster and creating a positive reputation towards potential investors.

4.4 – Academic spin offs

The term spin-off, in general, referred to those new companies born using resources (financing, know-how, technologies, human resources, relationships, etc.) made available by a main organization such as large companies, research centers, universities. . (Declich 2006, Sorrentino 2012, Kroll 2008)

As far as university spin-offs are concerned, it must be said that these, in recent years, have particularly increased as a phenomenon given the expansion in the objectives of university missions. So much so that the first mission (teaching for student) and the second mission (research activity) is accompanied by a third university mission which means that the university must also "exploit economically" the contributions of the studies and research carried out to its own indoor. (Van Looy et al, 2011).

With reference to academic spin-offs, therefore, the main objective is to pursue the so-called "conversion" process, that is to say the transformation of a university research result or a specific technology developed at the university into an entrepreneurial project. So when the reference organization is a university, and the subjects that come together to give life to a business are researchers, professors, students, or even administrative staff in order to practice or commercially exploit the results of their research in this case we can speak of academic spin-offs. (Picarozzi et al. 2013).

Academic spin-offs, therefore, play the role of fostering technology transfer

processes by helping to bridge the gap between the point where university research ends and the point where market interest begins (Cesaroni 2005, Piccaluga 2005)

Observing the trend in the United States, we note that the start-ups born from acedemic spin-offs are on average 2000 per year (Surveys AUTM data).

The phenomenon in Italy, although growing, is still at an early stage and only in 2000' did it begin to grow considerably.

Today the active spin-offs of public research in Italy are 1721. (Spin-off Italia)

Another interesting fact for the purposes of a quantitative analysis of the phenomenon in question is that relating to the geographical location of the spin-offs. In particular, it is evident that the initially most active regions from the point of view of the creation of research spin-offs have maintained a high level of companies for each year: the phenomenon is evidently concentrated in the northern regions (see graph 4) - where, moreover, 47.6% - of the spin-offs - are located, despite being on the increase in the Center (29.3%), while the remaining 23.1% is distributed between the South and the Islands. The latter are, also in this field, the least active territories, due to the very serious economic difficulties they traditionally experience and which were heavily aggravated by the 2008 crisis.

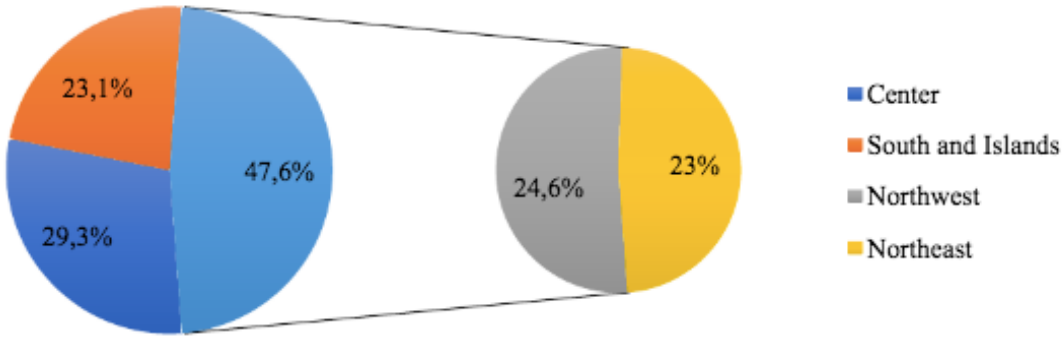


Fig 9 Coccorullo and Boffo reworking (2018) on the distribution in Italy of academic spin-offs

The table below shows the spin-offs currently active in the main Italian universities

Politecnico di Milano	117
Politecnico di Torino	116
Università di Padova	76
Scuola Superiore Sant'Anna	61
Università di Bologna	59
Univeristà Federico II di Napoli	41
Università degli Studi di Firenze	41
Università Tor Vergata di Roma	41
Università del Salento	40

Tab 6 spin-offs active in the main Italian universities, our reworking.

Finally, another interesting aspect is that of the main sectors in which academic spin-offs are widespread. Specifically, the sector that seems to incorporate the largest number of companies (23.9%) is that of ICT (Information and Communications Technology) (see graph 5), immediately followed by services for innovation (22.9%). Fewer spin-offs concern the energy and environment sectors (16.3%) and life sciences (15.6%); and very few biomedical ones (7.2%), electronics (5.5%), industrial automation (3.6%). (Netval 2019).

Chapter 5 New technologies as a lever of start-ups scalability.

More and more often in recent years new technologies are implemented not longer by big companies but by new start-ups "(Boutetiere and Reich, 2018, P. Thiel, 2014)

The explanation for this phenomenon is that it is difficult to create new technological solutions in organizations that are too large. At the same time it is impossible to create new technologies even alone, "the one men band" in the buisness creation doesn't work.

The right compromise would be small creative organizations where the limited size "leaves room for better thinking" (Thiel P., 2014).

Therefore, to forge the new technologies of the future, according to Thiel P. (2014), the change must not take place in a "horizontal" sense, therefore in terms of global production volume, but must take place in a "vertical" sense, "from zero to one. ". The act of creation is unique, as is the moment in which it takes place. The result of the latter is something that only happens once and for this reason it must be pursued and preserved at all costs to achieve true innovation.

The sectors in which most of the so-called "unicorn" start-ups are present, ie those that exceed a value of 2 billion dollars, are definitely emblematic and are represente in the figure below.

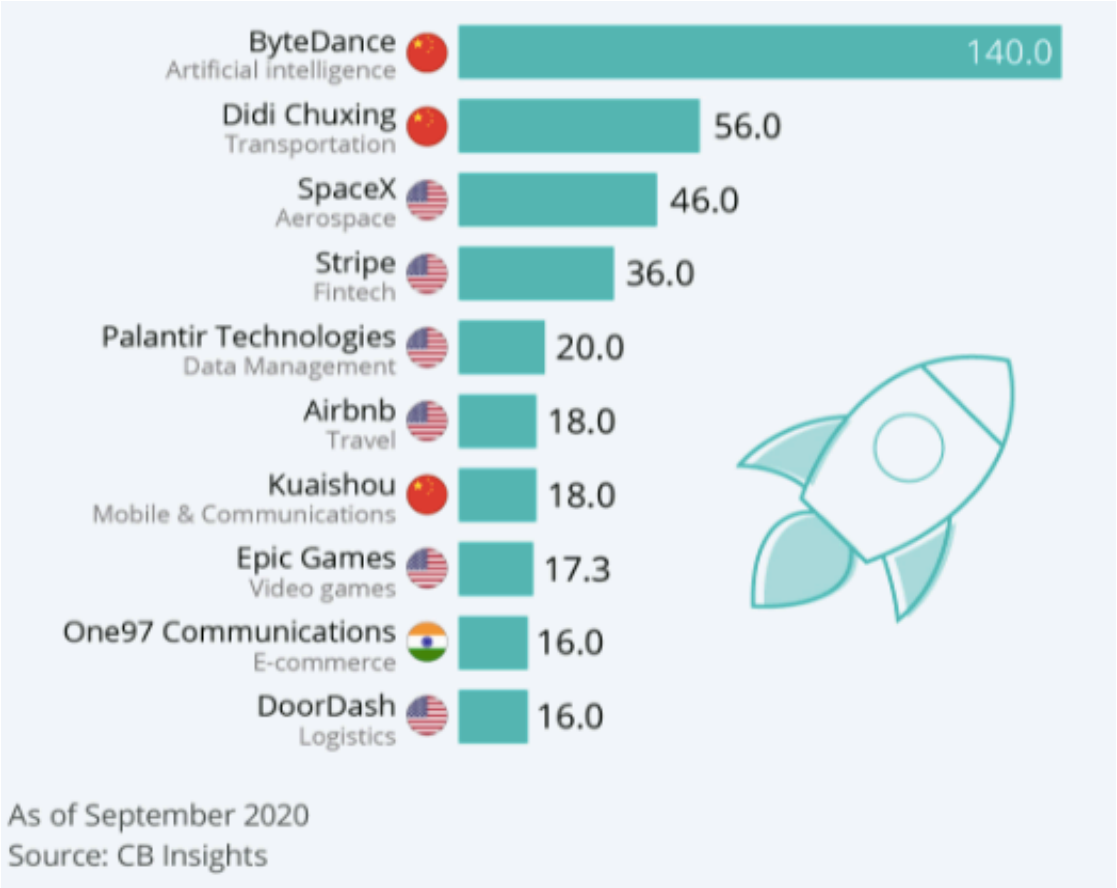


Fig 10 The ten sectors in which the ten "unicorn" start-ups in the world are present.

5.1 – Start up and digital trasformation.

Digital transformation is imperative for all businesses. In collective image, Digital Transformation concerns only the investments companies do in technology and people, consequently, identify it with its technological level. This misunderstanding arises because Digital Transformation used to be defined as "the use of new digital technologies, such as social media, mobile, analytics or embedded devices, in order to enable major business improvements like enhancing customer experience, streamlining operations or creating new business models." (Fitzgerald, M., Kruschwitz, N., Bonnet, D., Welch, M., 2013) or "a process that involves the diffusion of the Internet in both demand and supply sectors." (Bounfour A., 2016). According to New IDC Spending Guide, worldwide spending on the technologies and services that enable the DT of products, organizations and business practices is

forecast to reach 98 billions dollars in 2023, much more than the 38 billion spent in 2019. So, digital transformation of course means investments in technology, implementation, practice and automation of the whole company, however this is not the only meaning: authors like Stolterman and Fors gave the following definition "the changes that digital technology causes or influences in all aspects in human life" (Stolterman, E., Fors, A., 2004). It is clear that Digital Transformation has come into wide use in contemporary business media to shape the transformational or disruptive implications of digital technologies for businesses (new business models, new types of products/services, new types of customer experiences) (e.g., Boulton, 2018; Boutetiere and Reich, 2018) but actually, digital transformation affects customers, activities, processes, business models, and technology, it has much to deal with strategy, processes and knowledge. The phenomenon involves investing in new software and devices, but above all it requires a change in people's minds and the creation of a strong company-level strategy supported by the organization.

Thanks to digital transformation, traditional business paradigms are experiencing a strong change: new organizational roles are emerging, the need for a new entrepreneurial culture is growing, the reference ecosystem for innovation is changing with new players like start-ups company and tools like Artificial Intelligence (AI). As an important feature, digital maturity is required. It is fundamental for a company to successfully carry out the digital transformation, AI as a science able to produce complex system, can improve significantly start-up companies' performances.

Digital transformation, Start-Up Companies and AI have propositions that go hand in hand: digital disruptors and innovative start-ups are changing traditional business exploiting existing practices, products, services, and contents using, above all artificial intelligence, and all kind of new technologies.

According to a 2019 research by the British venture capital MMC Venture, the dynamics of AI entrepreneurship in Europe are growing and the landscape for start up entrepreneurs has changed. In 2019 Europe's 1,600 AI startups have matured, bringing creative destruction to new industries, and navigating new opportunities and challenges. Suffice it to say that in 2013, just 1 out of 50 new start-ups embraced AI

and in 2019, 1 in 12 put AI at the heart of their value proposition, so the percentage of european medium and large companies employing artificial intelligence technologies has gone from 4% to 12%. The group is led by the United Kingdom, with almost 479 start-ups that take advantage of AI technologies, more than double that of France, which follows with 217 companies, and Germany, third at 196. In eighth position there is Italy, with 66 highly technological startups. (MMC Ventures, 2019)

As of 2019, 10,630 innovative start-ups in Italy have increased employment by 6% per half year, with over 40,000 shareholders. 700 million capital raised in fundraising and over 10,000 employees have been reached, suffice it to say that at the end of september 2019, 2,576 innovative startups started thanks to a digital and free establishment method, an increase of 169 units compared to the figure recorded at the previous registration, at the end of June 2019 (Sole24Ore, 2019).

2020 for Italian Innovative Startups may be a year of growth. The Fondo Nazionale Innovazione (FNI) has become operative. So, the Government may be able to invest through venture capital operations, in strategic companies and startups, thus giving the great opportunity to generate new resources, a better way to align the interests of Italian investors and entrepreneurs towards the common goal of economic growth. (MiSe, 2019).

Today, the literature on start-ups and Artificial Intelligence is rather sparse, there is still little scientific evidence on the subject but the conditions are promising and rather than positive. Thus, this paper proposes a review on start-ups and artificial intelligence aiming at setting the ground for a research based on highlighting the tie between these two topics. The analysis of start-ups from the Italian context allows the depiction of some insights and outlooks on how artificial intelligence can favour the emerging and the workability of new ventures. The description of Italian start ups case studies and an analysis on the role of artificial intelligence lead to some consideration for both scholars and practitioners, while the paper ends with limitations and the identifying of avenues for potential further research.

5.1.2 New Technologies and the concept of Start up' Scalability and Start up Replicability

As we have already defined in the chapter dedicated to entrepreneurship, Scalability and Replicability are terms and concepts that are always associated with a startup. Two, concepts of extreme importance in terms of evaluating potential, to the point of being considered to become the borderline between a "normal" business project and a real innovative start-up.

The adjective "scalable" and so the term "Scalability" means a business that can increase its size - and therefore its customers and its volume of business - even exponentially without the use of proportional resources. (Nielsen and Lund 2018). The startup, to be such, must therefore be able to take advantage of the economies of scale and thus generate costs that they grow in a manner not proportional to revenue growth.

In particular, the concept of "Scalability" for obvious reasons is particularly connected to that of new technologies. It is the latter that are the determining factors for obtaining a scalable business model.

As a main example, just think of the logistics algorithms that have made it possible to optimize the entire delivery processes of delivery companies.

In information and communication technologies sector, scalability is represented by the ability of a system, network or process to flexibly and dynamically allow the management of an increase in workload or the addition of new features. The intrinsic limits are therefore linked to the software and hardware architecture of the system itself. (Priestley D.2018).

Replicable refers to the ability of your product, service or business to be replicated and sold and delivered consistently and reliably, to serve (theoretically) infinite customers the exact same service or product, to the exact same standard, every time. So By replicable start-up we mean an innovative company that has a business model that can be repeated in different places and in different periods, without the need for major adjustments, thus introducing new appropriate solutions in different communities. (Maiolini, Giudici, 2019)

"…Some examples of replicable products would be nearly anything that comes off a high volume production line (eg iPhones), McDonald's Cheeseburgers (mostly), Xero's accounting app, subscription TV…."

"….Some examples of a non-replicable products would be things like custom motor bikes, architecturally designed homes, Oscar winning movies, advertising campaigns. If your product or service requires new thinking, or relies on the expertise of particular individuals each time it is delivered, it's not replicable….".

(nzentrepreneur, 2017)

In the literature, the debate is undoubtedly open to understand whether it is the creations of the most "disruptive" businesses that give life to scalable and innovative business models in a technological sense or if, conversely, the latter are precisely the result of high-value technological implementations. Many scholars have investigated this issue (Kostoff et al., 2004; Bower 1995; Chesbrough, H. W.(2003).

The emerging phenomenon of Scale-ups is certainly very connected to the theme of scalability and to that of technology, which are types of start-ups that reach higher stages of development:

Alberto Onetti (2014), of the Mind the Bridge Foundation, in his article asserts "*Your startup becomes a scaleup after it has validated its business model, solved the challenges facing the startup, and is therefore ready for growth., an exponential growth*."

Also Onetti, in a comment made to Startupbusiness (2017), had given this definition of scaleup:

"*Scaleups are startups that have reached a" critical mass "and are ready to become relevant taxpayers for the economy (both in terms of revenue generation and the jobs they offer to people). There are different types of "critical mass" for different types of business.* "

We define this transition from start-up to scale up with the auphorism "crossing the chasm of growth", inspired by the definition of Geoffrey Moore (20016) in his book "Crossing the Chasm" dedicated to scaleups.

5.2 The “Accessibility” to new technologies in Italy

Big Data, Artificial Intelligence, Machine Learning, these are just some of the advances that are already part of our reality and that technology startups want to take advantage of to revolutionize very different sectors such as health, Fintech, Biotech, Edtech startups and Food.

The use of new technologies are crucial for achieving the so-called "Scalability" and "Replicability" objectives of start-ups..

There are several theoretical contributions that describe the commitment of accelerators and incubators of start-up companies to favor and support not so much the development of new technologies at the service of start-ups but more to the accessibility of the latter for start-ups (Aernoudt, 2004; Bruneel et al. 2012; Petretto 2007).

A particular connection between new technologies and Scalability and Replicability are the concepts of: Horizontal Scalability, Vertical Scalability and Virtualization. (Zaki and Hussein 2019)

Horizontal scaling consists of adding hardware components to meet demand. For example, it involves equipping multiple servers (even temporarily) to cope with increased flows and load balancing.

Vertical scalability means adding components to existing machines. Let's take the example of servers, which can benefit from additional resources (processor, memory, etc.) which increase their performance.

Vertical scaling, unlike horizontal scaling, is more limited. In fact, while it is possible to extend your IT park indefinitely (provided you have the means, of course), the capabilities of a single server are reduced.

Virtualization is the possibility of grouping the various IT resources (servers, operating systems, software, etc.) of the company on a single machine. This process brings much more flexibility, both in terms of horizontal and vertical scaling.

Among the necessary requirements established by the MISE to obtain the appointment of "certified incubator", a startup support organization must, in fact, have "adequate technological equipment for the activity of innovative startups, such as ultra-broadband access systems to the network internet, hardware machinery, tests or necessary technological prototypes " (MISE, 2021)

In Italy, among the measures that the MISE promotes for the development of new innovative technologies and above all for greater accessibility by all start-up companies and small businesses to the latter, it is worth mentioning that of: "Voucher for digitization".

That is, a facilitating measure for micro, small and medium-sized enterprises which provides for a contribution, through the granting of a "voucher", for an amount not exceeding 10 thousand euros, aimed at the adoption of digitization interventions of business processes and technological modernization.

The implementing discipline of the measure was adopted with the inter-ministerial decree of 23 September 2014.

The voucher can be used to purchase software, hardware and / or specialist services that allow you to:

- improve business efficiency;
- modernize the organization of work, through the use of technological tools and forms of work flexibility, including teleworking;
- develop e-commerce solutions;
- benefit from broadband and ultra-broadband connectivity or internet connection through satellite technology;
- carry out qualified training of personnel in the ICT field. (MISE , 2020)

There are several other measures promoted by the MISE to encourage and support the development and accessibility of start-ups to new technologies, in this way we try to make the fabric of start-up companies more attractive to the venture capital

market, to facilitate and encourage open innovation processes and increase the competitiveness of Italian companies in the international context.

5.3 – Artificial intelligence-based Start-ups: insight and Outlooks in Italy.

As we have noted from from the ranking of "unicorsn" start-ups in the world, one of the most widespread new technologies used to support almost all innovative industrial sectors is undoubtedly that of artificial intelligence (Fig 10).

This paragraph will present a research on start-ups and artificial intelligence in which the author of this PhD thesis was co-author.

The review of the literature of the start-ups engaged in the development of artificial intelligent technologies, the research findings and the final discussions including the limits of the research are reported:

In literature very little attention has been paid to the study of the connection between start-up companies and artificial intelligence. Scientific evidence regarding the integration of AI and start-ups are still quite limited. However, there are several positive and promising contributions, such as the case studies analyzed, which increase the thesis according to which Artificial Intelligence is a key, useful and successful engine for an innovative start-up company but, as we may see, our Italian professional and educative context must be improved.

History shows us that the main technology companies such as Apple, Google and Amazon that are highlighting artificial intelligence today at the time of their birth were start-ups. Since the launch of the first products on the market, these already showed a predisposition for future uses of artificial intelligence systems.

The flurry of interest in AI is triggering a variety of reactions, everything from excitement about how the capacities may quickly increase the start-up businesses (Agrawal A. et al., 2017) making start-ups more and more scale ups (Rinzwana,

2019).

Moreover, the risk that artificial intelligence can become a simple formula for acquiring more funding is real. According to David Kelnar (2019), head of research at Mmc Ventures, startups that use the definition "Ai" receive on average 15 to 50% more funding than those that are simply, and perhaps more honestly, only technological-based.

Regarding the Italian startup ecosystem, the risk in AI is two-dimensional, a double scenario opens. From a commercial point of view, the Italian markets may not yet be mature. Instead, from a technological point of view, the risk of failure in scientific research is one of the biggest business challenges faced by european and in particular, Italian startuppers. So, according to the Global Consulting Roland Berger, AI startups should be seen as business labs, basing their experiments on fresh algorithmic research – "a model that is not easily captured by traditional due diligence scanning." (Roland Berger GmbH, 2018) Consequently, the focus shouldn't be on an immediate ROI and on research and development results. Indeed, it should be imperative to set higher incentives in terms of risk and return, with a consequent improvement in the possibility of acquiring startups, making exits more profitable.

Compared with the USA context and other European countries, one of the main reasons why Italy is at the bottom of the ranking about AI implementation, is the absence of integrated training able to provide industry, professionals, and young people with tools necessary to better face the jobs of the closest future. The Italian education system and the traditional world of work don't encourage the culture of risk-taking, seen as a resource for sharing with greater force and experimentation. To realize an AI ecosystem over time, it is necessary to encourage Italian successful startups and successful companies to invest in new technologies through corporate risk capital by creating and celebrating success stories that we focus on our talents; even foreign digital entrepreneurs could find in Italy the ideal place where innovation and a sense of beauty can be combined everywhere (Marinoni, 2019). In this way, Italy may be able to attract fundings and to consolidate, over time, a vocation for the business of the future focused on the birth and growth of successful start-ups which

implement Artificial Intelligence. All should be accompanied by a renewal of the Italian education system and a reimagination of business: in order to get the most value from AI, operations need to be redesigned. To do this, start-ups must first discover and describe an operational area that can be improved.

In conclusion, according to Harvard Business Review, startuppers should do new and different things and to do things differently. (Davenport, T., Brynjolfsson, E., McAfee, A:, Wilson, H., 2019).

5.3.1 Finding and discussion on Artificial intelligence-based Start-ups.

The analysis of the ten case studies, led us to classify them in three groups based on the addressees of the activity and the main effect they currently offer. Due to this, the three groups are 'Data analysis for market', 'Data analysis for marketing', and 'Tools'. All the cases shaping the first two groups are offering B2B services, while the group 'Tools' hosts either B2C or B2B solutions.

'Data analysis for market'

This group embeds Travel Appeal, MDOTM, and Ayxon AI.

Travel Appeal collects data from over 500 sources in order to create the potentially biggest database in tourism industry. The analysis of this data leads to the creation of various algorithms and as a consequence to information offered through graphics, maps, and trends. The main aim of the expected information is to combine trends and predict prices, number of tourists visiting a place, expected revenues for hospitality firms. Due to this offering, the firm claims the opportunity to increase firms' revenue up to 25%, increase employment, and favour a higher number of direct bookings up to 7%, supporting more conspicuous margins for firms. Currently, almost 3.000 firms subscribed for this service and some of them implemented even a chatbot in order to shape new tourism offerings to be proposed to tourists.

MDOTM is a start-up using the tools of artificial intelligence to create investments

strategies. As in the previous case data collection and analysis are two key processes, since they allow the creation of trends and the relationship among them and with other impacting variables, as rumours. The main aim is to counteract market inefficiencies and create useful tools for banking and insurance industry to offer less risky and more performing financial products to investors.

Ayxon AI is the third case in this group; it deals with the same industry than MDOTM; indeed, financial data are analysed even if with a different goal, since artificial intelligence is used to analyse the solvency of loans offered to firms and merchant banks. The need of using artificial intelligence depend on the wide amount of data to be considered, since these loans are complex in nature and based on multiple goals. Long-term predictions, analyses of performance, and trends analysis are some of the key actions proposed by Axyon. Additionally, the solution proposed by Axyon can be used to support decision-making in investments.

'Data analysis for marketing'

This group consists of Cynny, Thron, ELSE Corp, and Roialty.

Cinny set a platform based on artificial intelligence and allowing the recognition of gender, age, and emotions of users. The platform offers a software named MorphCast that can analyze facial expressions and adapt marketing tools to users' emotions, gender, age, and potentially other features in future. The software is run onto a remote server and can be embedded in other marketing tools already in use from a firm. Additionally, the rate of correct recognizing of emotions and gender is over 95%. Cinny already dealt with problem related to privacy and data management, since data protection is ensured by software feature and by the usage of big data.

Thron offers a way to classify digital contents in order to propose the most suitable ones to users, based on what is considered as aligned to their personal features. The platform combines performance management tools, with asset evaluation and service provision, in order to be integrated with all operations, but mainly with marketing as a solution for e-commerce, CRM, and online communication. Several world-famous brands chose this service and they already confirmed costs reduction as one of the

key benefits.

ELSE Corp is somewhat similar to Thron, but it embeds even distribution channels management. Design customization, orders management, and new solutions to favour online shopping are the core of the offering; these services are based on customers features and they should allow firms in fashion industry to make offers more suitable to consumers. The insights from sales are further analysed through artificial intelligence in order to update the information to be used for manufacturing; indeed, cloud production as well as 3D manufacturing are additional services firms can implement.

The fourth case pertaining to this group is Roialty; this firm offers a solution for digital marketing, since data from social networks are analysed and based on online interactions and personal data firms would get insights on how to address messages and products to consumers. In order to increase customers' engagement there is a chance to gamify the online interaction; this leads to collect additional information. Moreover, the analyses are not limited to consumers, but they are even oriented to analyse competitors, since reputational analysis, benchmarks, and other social listening activities are performed to compare firms. Finally, the firm offers a support to learn how to use the services proposed.*'Tools'*

The case studies shaping this group are Musixmatch, Cogisen, and Kellify

Musixmatch collects, shares, and analyses lyrics from songs all over the world. The aim of the firm is to build the widest dataset of lyrics in the world. The services are addressed to end-users as well as to other firms working through machine learning; in the first case, users can look for song lyrics, while firms using this service can create recommendations, further analyse lyrics looking for feelings, reactions, and paths among songs.

Cogisen offers a platform to be implemented in different ways, but the most common use is related to video sharing platforms, since an algorithm can compress videos and favour a quicker sharing and an easier storage of videos compared to the available technologies. The implementation of artificial intelligence creates the content considered as not core, while only the core part is really stored. The same algorithm

can be applied to streaming too and further ways to use it are expected in relation with IT safety and autonomous cars driving.

The last case of this group is Kellify, a firm creating algorithms to correlate daily events and value of commodities. Price transparency and inefficiency reduction are the key goals of this firm, since some commodities can be considered as useless or be perceived of minimal value, while for art lovers and collectionists they can have a very high economic value. Automated learning, cognitive processes, and data combination and analysis are the pillars of this system offering information on value to all users.

Discussion and implications:

The case studies we analysed helped us in grasping some more meanings about what artificial intelligence can offer to start-ups and - even before - to new ideas development; specifically, artificial intelligence can be thought as a supportive element to launch new products, new services, new ways of doing, thus it greatly catalyzes innovation in business.

This first consideration is aligned and expands the study on the tie between entrepreneurship and innovation (Matricano, 2019), bridging these two topics with artificial intelligence. Indeed, it represents an innovation driver for firms in order to change how markets are shaped (Nenonen and Storbacka, 2018), but also how operations are performed and services are offered. The evidences of this study recalls the contributions by Rust and Huang (2014), stressing how artificial intelligence may change service orientation in firms and services themselves, but it highlights manufacturing, service design, and service provision as three processes mainly affected by artificial intelligence. A focus on this area expands the previous understanding (Garbuoi, 2019) of industries and firm typologies affected by technological innovation due to the recent development of artificial intelligence.

Additionally, Kai-Uwe Brock (2019) described artificial intelligence as supporting existing business and this study confirms this evidence, but also new ventures can be created because of ideas generated an deployed through artificial intelligence. Thus

this represents an answer to call for research by Magistretti et al. (2019) wondering how managerial practices may be affected by the essence of new technologies as artificial intelligence.

Finally, scholars consideratioconsiderationsyns on scalability of business models (Thiel, 2017) may be widened when considering artificial intelligence, because the essence of some artificial intelligence-based processes depends on a wide scale of data and processes, leading to consider scalability as an innate feature of new ventures deploying new processes, services, and products through artificial intelligence.

From a practical perspective, this research shows some of the potentiality of artificial intelligence in changing markets, business activities, and ways of performing actions for service for customers. Thus, the positive impacts new technologies had on the Italian context should encourage interventions at both a micro- and a macro-level; indeed, new investments in start-ups can be partnered by artificial intelligence as a carrier of new opportunities to be infused in new companies and creating the chance to innovate markets and firms' processes. At a macro-level, national and supranational institutions should encourage change through artificial intelligence since the beneficial impacts on innovation, employment, and competitiveness are self-evident. All in all, artificial intelligence mirrored the opportunity to chase for two key features of start-ups: rapidity and scalability, since the diffusion of innovation through artificial intelligence-driven processes is faster and can easily operate on a wide scale, as often wide amounts of data are required and a variety of application - both in B2B and B2C markets - are achievable.

Conclusions, limitations, and further research:

To sum up, this research describes how artificial intelligence can act as the trigger of change through start-ups creation and the engine of change in markets. The features of artificial intelligence are aligned with what new ventures need, namely with the chance to catalyze innovation process, to offer something completely new, or to reshape existing services and processes in a more performing way.

The nature of this study is exploratory, thus some limitations are self-evident. Firstly, the start-ups considered are among the most successful in Italy, but a wider sample may lead to more detailed and relevant considerations. Additionally, the analysis is based on multiple sources and conducted as a desk analysis, thus the implementation of other methodologies may lead to new insights. Indeed, we believe further research on these topics can expand the evidence achieved in this paper by considering a wider amount of Italian start-ups and the focus can be expanded to other countries too, in order to understand if the readiness of entrepreneurs is related to the context. Moreover, the analysis of start-ups can be partnered by interviews in order to confirm the findings or update already achieved and to get new insights on these new ventures, also through the analysis of their performance as soon as available. It is in program to compare startups in the same sector, where only one is using AI, and see the difference in terms of economic performance, customer perceptions and quality of business model.

Finally, the overview on artificial intelligence as a driver of innovation and success for start-ups may be enriched by considering the evaluation of users, both in the B2B and in the B2C market.

Chapter 6: Case study: a comparison between Rome and Naples and a first Benchmarking analysis with Silicon Valley

The author investigate the key themes in the wider context of the most relevant startup ecosystems, then in particular three startup ecosystems, aiming to acquire practical insights into the activities they performed.

We choose 3 start up ecosystem very different from each other. The first two are Italian ecosystems with opposite functioning models but inserted in a similar economic and cultural context. The third, probably the most important in the world, that of San Francisco, Silicon Valley, was chosen because it operates into a practically opposite cultural economic scenario.

The first two chosen start-up ecosystems are not even mentioned in the main global report on international start-up ecosystems (Report Genome), the third ranks first in the ranking of the same report.

We explained the research methodology.

As a support to the development of the three case studies, our choice is in line with previous studies in entrepreneurship, such as Goyal et al. (2016) opting for a qualitative and exploratory approach (Hernández and González 2016) that concern two-step analysis to first frame the context through referenced reports, then analyze it in detail by calibrating some interviews with ecosystem actors following the narrative analysis approach (Boje 1991).

6.1 First Level of Research procces: Evidence from Global Reports.

The evidences from Global Start up Ecosystem Genome has been infused with insights from the literature, leading to the identification of the topics listed in the Table n 7 shaping the debate on Start ups Ecosystems.

The table describes the themes framing the questions, the concrete items derived from each theme and shaping the questions, the main references from startup ecosystems as in Genome (2020) and from the literature.

The themes and perspectives analyzed and reported in the table correspond to the three perspectives analyzed to describe the ecosystems and the role of incubators: Actor - Context - Resources.

Themes and perspectives leading to questions	**Key items**	**Main references from Genome**	**Main references in the literature**
Overview of the ecosystem	Nature, data on accelerated startups, ongoing activities	Fundraising programs (Bahrain); Acceleration plan (Tokyo)	Kanbach & Stubner (2016) Cukier & Kon (2018)
Actors shaping the startup ecosystem and the UBA	Universities, UBA directors and key figures, startup currently involved, former startups now scaled up, fundraisers	Collaboration with universities (San Diego); Scale-up globally (Mid-East Region)	Bretznitz & Zhang, 2019 Krajcik & Formanek (2015) Hernández & González (2016) Mansoori et al. (2019)
Context hosting the activities of the Ecosystem	Business model of the accelerator, viability of the accelerator	Local innovation market (Madrid); Supportive community (Boston)	Bernhofer & Han (2014) Cukier et al. (2016) Sipola et al. (2016)
Resources offered to startups from Actors: a) in general	Core competence, technical resources, prestige, interplay among resources, structures	Artificial intelligence Labs (Montréal); Talent attraction (Seoul)	Buchnik et al. (2018) Franco-Leal et al. (2019) Malecki (2018) Stayton & Mangematin (2019)
b) knowledge-based activities	Learning orientation, innovation perspective,	Knowledge through connections (Rhineland);	Dempwolf et al. (2014) Tripathi et al. (2018) Ismail (2016)

	strategic support (including exit)	From higher education to bootstrap (Western Denmark)	
c) Relations brought in the accelerator	Market relationships, support to partnerships	Interplay between local-global markets (Nur-Sultan); Partnership with big players (Belgrade and NoviSad)	Berger & Kuckertz (2016) Bliemel & Flores (2015) Baloutsos et al., 2020

Tab 7 – Themes and perspectives, items, and main references shaping the research process

The following sub-sections rileva i risultati più evidenti dal processo di infusing infusion between the Evidence from the Global Reports and the existing literature

Startup ecosystem: Actors

Some authors theorize that startup ecosystems focus a lot of attention on the actors; Krajcik and Formanek (2015) describe the key role of actors in depicting a startup ecosystem and its potentialities, as they state that (a) actors as startups, policy agencies, incubators, accelerators, and risk capital providers are structural components, and (b) the openness may favour the joining of new actors, as it "is rare to have a complete startup ecosystem" (p. 15). In a similar vein, Franco-Leal et al. (2019) identify various stages of a startup ecosystem, each of which has its own tasks and resources; therefore, relationships with actors are necessary to fill the gaps related to both activities to be performed and resources to be integrated.

Lauzikas et al. (2015) offer a slightly different view, though one still based on actors; indeed, they consider a startup ecosystem as being shaped both by initiatives from its members and by external initiatives such as dimensions supporting the development of new ventures. Similarly, Sipola et al. (2016) framed this ecosystem as a setting featured by contextual factors and actors, a temporal dimension, and renewal mechanisms, as the prior economic history and policies. The latter topic is not often considered in the more established literature, as occurs in the contribution by Cukier and Kon (2018), which leans on Isenberg (2011) to identify regulations, market, finance, knowledge, entrepreneurial capabilities, and entrepreneurship culture as factors affecting the performance of an entrepreneurial ecosystem.

Therefore, the institutional dynamism in incubators and accelerators favours either the emerging or the maturity of startups (Joshi and Satyanarayana, 2014).
With reference to the literature and with a look at the reports we can therefore state that the Actors shaping the startup ecosystem and the UBA through key factors such as Universities, UBA directors and key figures, startup currently involved, former startups now scaled up, fundraisers. Some examples and main reference from Genome are Collaboration with universities (San Diego);
Scale-up globally (Mid-East Region)

Startup ecosystem: Geographical context

On the other hand, some authors theorize that startup ecosystems adopted a perspective based on geographic variables. One of the contributions adopting such an approach is Cukier et al. (2016), who defined a startup ecosystem as "a limited region within 30 miles (or one-hour travel) range, formed by people, their startups, and various types of supporting organizations, interacting as a complex system to create new startup companies". Similarly, Cohen (2006) had started from the conceptualisation of an entrepreneurial ecosystem to propose his view on a startup ecosystem, identifying the "diverse set of interdependent actors within a geographic region that influence the formation and eventual trajectory of the entire group of actors [...] to generate new venture creation over time." (pp. 2-3). Some years later, Bernhofer and Han (2014) focused on the social and cultural background as elements favouring innovation and personal traits; therefore, due to the inner nature of startups, with innovation and the personality of the entrepreneur at their core, the authors describe the startup ecosystems evolving throughout time because of the results of innovation and the personal features of the entrepreneurs, most of them depending on the local context; in any event, this context may appear as chaotic (Spiegel, 2015), leading to a 'challenge in the challenge' for the entrepreneurs-to-be. A narrower approach (Audretsch and Belitski, 2017) focused on cities as contexts hosting startups; thus, the socio-economic, institutional, and information environment of a city shapes the startup ecosystem and the startups themselves. Similarly, Miles and Morrison (2018) enforced this idea by observing rural contexts;

they consider those contexts as embedded in both the processes leading to the creation of a startup and the activities it performs.

With reference to the literature and with a look at the reports, we can therefore state that Geographic Context hosting the activities of the Ecosystem through Business model of the accelerator, viability of the accelerator. Some main references from Genome are Local innovation market in Madrid and the Supportive community in Boston.

Startup ecosystem: Resources

Finally, the third group of contributions identified describes a startup ecosystem offering a perspective centred on the resources shaping it and contributing to its evolution.

A pioneering contribution focusing on resources is Spiegel (2015), as the author referred to entrepreneurial culture, financial benefits, and other elements typical of an industrial culture as triggers of new ventures. In this domain, great importance is assigned to knowledge and risk capital as resources supporting the setup of a startup ecosystem and affecting the change to be successful (Hemmert et al., 2016). Furthermore, Malecki (2018) affirmed that the nature of an ecosystem is that of an umbrella, as both term and context; therefore, an ecosystem is a setting consisting of resources and performing activities because of them. Similarly, Buchnik et al. (2018) state that the performance of a startup ecosystem depends on the various resources available, both related to all businesses (such as resources, knowledge, and skills) and to new ventures (such as contests, simulations, a learning program via lectures, and mentoring). Finally, new approaches to resource integration and mutual exchange represent stimuli for entrepreneurs, as they give fluidity to startup ecosystems, favouring the permeability of new competence, additional actors, and new ways of doing. These elements are all needed in an innovation-oriented context (Fraiberg, 2017; Ventura et al., 2019), though further research has been called for to depict how the activities of startup communities can be improved (Manabe et al., 2019) and how accelerators' members can impact both startups and startup ecosystems (Cohen et al., 2019).

With reference to the literature and with a look at the reports we can therefore state that the Resources offered to startups from Actors are

- in general: Core competence, technical resources, prestige, interplay among resources, structures some main references from Genome report are Artificial intelligence Labs (Montréal); Talent attraction (Seoul);
- knowledge-based activities: Learning orientation, innovation perspective, strategic support (including exit); some main references from Genome Knowledge through connections (Rhineland); From higher education to bootstrap (Western Denmark);
- Relations brought in the accelerator: Market relationships, support to partnerships. Some main referece from Genome are: Interplay between local-global markets (Nur-Sultan); Partnership with big players (Belgrade and NoviSad).

6.2 First level Research process: Rome start up ecosystem.

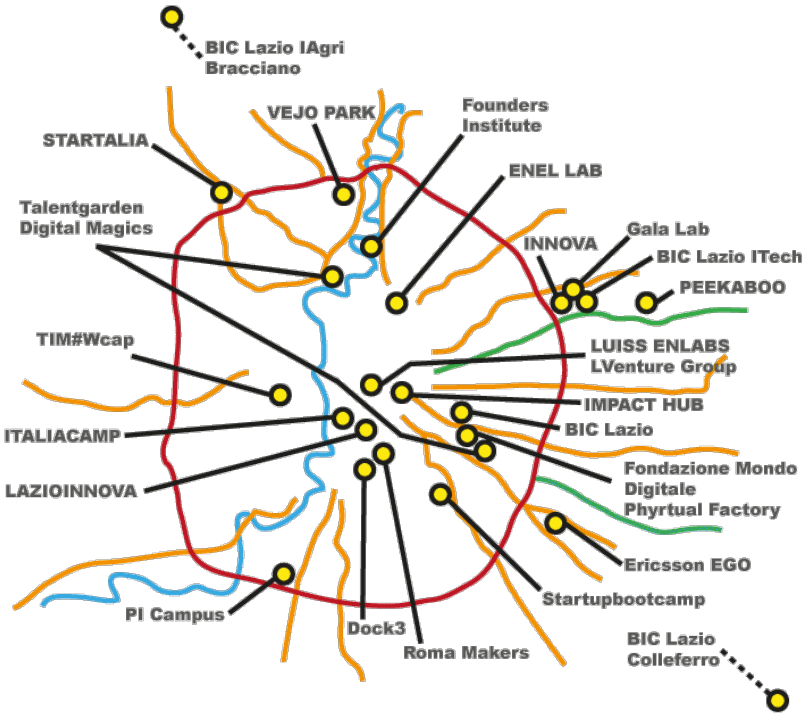


Fig 11 Graphic representation of Rome start up ecosystem.

As we will also assert in the paragraph of comparison with the ecosystems of excellence of San Francisco it is wrong to rely on the analysis of the innovative startup register to understand how they are located on the national territory, while - in the absence of specific research - it is more appropriate to observe where specialized actors like, incubators, accelerators, universities engaged are concentrated. This analysis shows that there are lots intermediates in Rome operators with a tendency to growth, and among these the presence of only international operators operating in Italy. Rome is therefore the city with the greatest concentration of public or private incubators and accelerators in Italy, followed by Milan.

The Roma Startup association declares that, every year, more than 100 innovative startups in Rome participate in incubation or acceleration projects: most of these receive funding ranging from 300 thousand to 1 million euros. In addition to

initiatives specifically dedicated to the sector, the city of Rome - with its 28 universities is the largest Italian campus.

To provide these numbers, we took a cue from the Report structure made by the "Roma Start up" association in 2018, completing it with other data provided by the main newspapers of 2020 and 2021 specialized in the topic of start-ups such as start up Italy, Start up Business, Economy up and Lazio innova.

The liveliness of the scene is also evidenced by the very high number of specialized events aimed at the community of innovators taking place in Rome, and by their success in terms of visitors and speakers.

6.2.1 Numbers

This analysiy show that the startup ecosystem in Rome has grown very rapidly in recent years. The number of private, public and international initiatives to support innovative entrepreneurship in the area is growing exponentially. From the first Private Accelerator opened in 2010, in the 2018 the city showed: - 24 incubators / accelerators - 12 FabLabs - 5 Technology Transfer Centres - 50 Smart Working Centres In addition, over 20 associations and institutions with specific programs to accompany young innovative companies contribute to spreading technology culture in Rome. (Start up Rome association, 2018)

Furthermore, in 2019 there were 14 co-working for start-ups in Rome. (Economy up, 2019)

Every year, in the city, there are a hundred startups participating in incubation or acceleration programs, and most of them receive funding from 300K to 1M in euros. Between the end of 2019 and the beginning of 20020, there were four thousand start-ups in Rome (Start up business, 2020)

6.2.2 Supporting organizations: Accelerator and Incubator in Rome

Below we propose a mapping of the main incubators and accelerators in Rome:

Luiss Enlabs:

startup accelerator in Rome managed by Lventure Group, a venture capital company that provides Luiss Enlabs startups with financing and networks.
Luiss En labs is one of the leading startup accelerators in Europe. Born in 2013 from a joint venture between LVenture Group, a listed venture capital operator, and LUISS University, in just a few years it has supported the growth of over 40 startups. Its headquarters, a co-working space of about 5000 square meters, is located in a strategic location in the historic wing of Rome's Termini Station. (Luissenlabs.com)

Spazio Attivo di Lazio Innova Roma Tecnopolo:

The "Spazio Attivo Roma Tecnopolo" is an incubator for the creation and development of new companies with a high technological content. Since 2006 it has been the seat of the ESA BIC Lazio Incubator born from the agreement between the Lazio Region, the European Space Agency (ESA) and the Italian Space Agency (ASI), within the Technology Transfer Program (TTP) of the European Space Agency. The goal is to facilitate the use of space technologies and systems for innovative commercial applications (products and / or services). The Program includes incubation and financial support for startups. (Lazioinnova.it)

Picampus

Picampus is an incubator for early stage startups, it is a space surrounded by greenery in the heart of the Eur district of Rome, which combines the best working environment with talented realities.
Pi Campus is both a startup district and a venture fund that invests in talent
This incubator provides startups with money, mentoring and the best possible working environment to grow them. The organization began in the basement of a

single luxury residential villa where two companies were based: Translated, the first internet-based translation service, and Memopal, a backup technology provider used by manufacturers of storage, telecommunications and antivirus services. (Picampus.it)

Startupbootcamp Foodtech

Startupbootcamp Foodtech is the first global Food Tech accelerator based in Rome. Launches a call to select startups active in the field of technologies applied to the world of food, to be hosted and accelerated in the complex a few tens of meters from the Basilica of San Giovanni.
(Startupbootcamp.com)

Italia Camp

Italia Camp promotes and supports business creations in the field of social innovation and the development of new answers to real questions, working to bridge the gap between the birth of an idea and its realization.
We could define it as one of the first "social incubators" in Italy to believe in the idea of putting the person and their social relationships at the center to generate new value in terms of economic and social impact, for communities and territories. (Italiacamp.com)

6.2.3 The commitment of the University and the 'Teach Events'

Rome is the largest campus in Europe for a number of university students: 28 universities for a total of 300,000 students. Among the most renowned universities, Rome has: ● John Cabot University ● LUISS ● Università La Sapienza ● LUMSA ● Università Campus Bio-Medico Roma ● Università degli Studi di Roma “Tor Vergata” ● Università Roma Tre ● Libera Università degli Studi per l’Innovazione e le Organizzazioni.
Thanks to the large number of universities present in the city, Rome is the city in Italy with more courses dealing with entrepreneurship

This, along with the fact that most of these courses are held in English, is one of the reasons why Rome is the second most sought-after destination in the world by students from the United States (immediately after London).
We see, below, the main university initiatives to support the development of start-ups:

Dok3

The engineering department of the Instituted by the Roma Tre university in collaboration with the Dock-3 incubator The Startup Lab offer during the Rome Startup Week, a program that lasts five months with a first bimonthly training phase, followed by the course of actual incubation. Everyone can participate, students and workers, just be motivated, be linked in some way to the university and know how to work in a team. Dock-3 is also aimed at those who do not yet have their own business idea. This can be born in Dock3Jam, in comparison with mentors and aspirants

Rome Start up Week end at John Cabot University

The penultimate event of the start-up week before covid 19 was held in 2019 at the John Cabot University in Rome.
Under the patronage of Associazione Nazionale Giovani Innovatori and the Canadian Chamber in Italy, John Cabot University to invite student, assistent professor and professor to participate in the JCU Weekend of Startups in the 2019 and for the third consecutive year.
The event is aimed at promoting entrepreneurship and entrepreneurial culture by involving university students and young entrepreneurs, startuppers, designers, developers. It is the latter who engage in a competition of entrepreneurial creativity and innovation, presenting innovative ideas and creating a work team to develop the project, all within 54 hours and thanks to the support of experienced mentors and coaches.

The ideas generated during the "marathon" will then be presented to a jury who will decide the winners of the contest, awarding prizes aimed at promoting the start-up of the business.

6.2.4 Public Support

Local Both the Regione Lazio and the Municipality of Rome are sustaining the flourishment of the startup ecosystem in the territory. The Regione Lazio has introduced the following tools:

- ● cancellation of local additional corporate tax on startups;
- ● grant program, doubling private investor's pre-seeds (30k - 100k euro at the idea stage);
- ● VC fund matching 2.5x on private investments (up to 2.5 million euro each);
- ● a small fund of funds. The City of Rome is mapping its available spaces to be turned in smart working spaces and it is working with private operators to create a public-private investment agency.

6.2.5 Main Start-ups

Startup Name: Big Profiles

Industry: Finance, Big data, AI

Headquarters: Rome

What they do: Born from an academic research at the Roma Tre University, Big Profiles starts from basic customer information available to companies and then enriches them with other data packages acquired from social networks, open data and other data sources to map people in a detailed manner. such that banks and insurance companies can redefine the customer target and develop the best

marketing strategies.

Startup Name: On Charge

Industry: E-mobility, green Economy

Headquarters: Rome

What they do: ON Charge is the first startup in Italy to enter the world of electric vehicle charging and sharing mobility. The goal of this start-up is to strengthen the segment of sustainable and electric mobility, private and shared, starting from Rome, creating real sustainable and electric mobility hubs, responding to market demands and travel needs ecological and safe from a health point of view.

Startupname: Genome Up
Industry: Helth, AI

Headquarters: Rome

What they do: **:** GenomeUp is an innovative startup that has developed an Artificial Intelligence (AI) to support hospitals, laboratories and research centers to find, in less than 24 hours, the most accurate diagnosis and therapy for patients with rare diseases, through the analysis of the DNA.

Startupname: MyBiros
Industry: E Learning;

Headquarters: Rome

What they do: **:** MyBiros, a tool that uses deep learning techniques to extract information from any document: printed and manuscript. Unlike traditional solutions, MyBiros recognizes the text, understands and extracts the fields of interest

Startupname: OffLunch

Industry: Food Delivery, Marketplace, AI

Headquarters: Rome

What they do: **:** OFFLunch is the first food delivery service designed specifically for the lunch break in the office, in order to have a healthy, balanced, economical menu every day with punctual and free delivery

6.3 First level Research process: Naples start up ecosystem.

6.3.1 Numbers and an overview

When, in Italy, we talk about startups, innovation and new businesses creation, we immediately think of Milan and northern Italy.

In fact, the birth of new businesses in the South is still slow, and certified incubators in the South are few: out of 45 incubators in Italy, only five are in the Center or South. (Infocamere, 2020).

In the face of all this, however, the Campania region shows decidedly countertrend and growing data.

The growing trend is evident and it is demonstrated by the important initiatives at local level, just think of the 'Unione degli Industriali' which created the Digital innovation hub or the University Federico II, an established reality both from the point of view of the transfer of typical skills and of innovation: the Apple Academy is considered a best practice from all over Italy. The Cisco Digital Transformation Lab in Naples should also be mentioned, born from the collaboration between Cisco and the Federico II University.

The attractiveness of the Naples start-up ecosystem is also demonstrated by the establishment of some big players

For example, Ferrovie dello Stato recently built a hub in San Giovanni a Teduccio. This is the first after that of Rome. Then there is the academy dedicated to 5G, where a number of well-known big players are concentrated, from Nokia to Tim. Finally, the Apple Academy, as already reported, which is now a consolidated success reality.

Although in the North there are dizzying numbers in relation to the birth of new businesses and the South is still lagging behind, there is a noteworthy countertrend: Campania is the third region of Italy for the number of startups, (Registrodelleimprese.it), and the first among the southern regions. Naples also achieves an excellent position:.

According to the Unioncamere report, at the end of the first quarter of 2021 Campania has 1,115 startups.

The highest number of innovative startups is located in Milan: at the end of the first quarter of 2021 there were 2,363, 18.8% of the national total. In second place is Rome, the only province that breaks through one thousand (1,286 startups, 10.2% nationally). Immediately after, in third place, there is Naples with 565 equal to 4.5% of the national total.

(Unionecamere, 2021).

6.3.2 The University Federico II in the stat-up ecosystem of Naples.

As can be seen from the mapping reported below, the presence and role of the first University of the city of Naples (University of Naples Federico II) is quite remarkable.

The intervention of the Universities of Campania is active in most of the activities and institutional bodies.

In addition to being a partner of the first certified incubator in Southern Italy, present in Naples, Campania New Steel, the Federico II University is engaged in many local initiatives to provide support for the birth and development of start-ups and the proliferation of the ecosystem itself.

The mapping that we will show highlights the University's commitment to both internal University initiatives and collaborations with external organizations, both public and private.

Campania New Steel

Campania NewSteel, is the first incubator in the South, promoted and participated by the University of Naples Federico II and certified by the Mise pursuant to the Growth Decree 2.0

To date, at the incubator, there are 20 Innovative Startups 33 Accelerated Projects 150 Employed 11 million Ecosystem turnover 750K Innovative startup funding.

Campania New Steel (CNS) was founded in November 2016 with the members of the University of Naples Federico II and Città della Scienza, which has conferred the spaces and curriculum of its business incubator operating since 2003. In June 2017 it obtained the certification pursuant to growth decree 2.0, the only one in southern Italy out of the 38 certificates in Italy.

In its offer system, the incubator provides support services and specialized services to allow startups that are setting up to better integrate into the ecosystem, facilitating access to the market and funds, multiplying relationships and opportunities, promoting international development supporting the creation and development of startup, spinoff and restartup projects engaged in its strategic reference clusters.

Start Cup Campania

Start Cup Campania is the Innovation Award promoted by Campania universities and aimed at competing groups of people who develop business ideas based on research and innovation.

It is a real business plan competition whose objective is to support research and technological innovation aimed at economic development and the creation of companies with a high knowledge content. The competition is part of the National Innovation Award (PNI), a similar competition organized nationally by various Italian universities, in which the winners of local editions take part. For the 2020 edition, there was operational coordination at the University Service Center for the Coordination of Special Projects and Organizational Innovation (COINOR) of University of Naples Federico II. For the nomination of the starr cup award, a Scientific Committee is appointed which evaluates the business projects presented with reference to the following general criteria:

a. originality of the business idea;

b. value of the technological or knowledge content;

c. feasibility;

d. development potential and project ambition;

is. adequacy of the skills of the management team;

f. attractiveness of the reference market;

g. quality and completeness of documentation

Federico II University Spin-off Commission

The Federico II University of Naples (hereinafter referred to as the "University"), to promote the achievement of its institutional goals, promotes and supports technology transfer and research enhancement activities.

In this scenario, it often happens that groups of researchers, often from universities

(a particularly widespread phenomenon in the United States of America), decide to undertake a path of commercial development of the results of their work, launching corporate initiatives known as Spin-Offs. In this way, precious energies are invested in processes aimed at further developing knowledge and seeking markets interested in using it and paying for it, generating a virtuous circuit of resources and individual and collective benefits.

Spin offs can be of two types: "Participated spin offs" in which the University participates as a member; "Non-participated spin offs" in which the University does not have a share.

In recent years, the commission has preferred to proceed in all cases with modalities "Non-participated spin offs".

University can be attributed to a company already established if all the conditions provided for by this regulation and by current legislation are met This recognition can be attributed upon proposal of the company concerned within four years of its establishment.

The participation of university staff in the Spin off can take place both in terms of participation in the capital and in terms of direct commitment to achieving the corporate purpose, offering the new legal entity the use of the know-how and skills generated in a context of Research.

Italian SCOUTs IN SCOUTS In Silicon Valley

From 2014 to 2017, promoted by DEMI Federico II in collaboration with the Ministry of Foreign Affairs, the Italian Consulate of San Francisco and the Union of Industrialists of Naples.
The 'Italian Scouts in Silicon Valley' project was created to better recognize and understand the opportunities that can arise from the interaction between the Italian fabric of innovative entrepreneurship and the Silicon Valley innovation ecosystem.

Through cultural, scientific research and business scouting activities, the project has made it possible to highlight the strengths, the opportunities connected to Silicon Valley, and the actors best suited to exploit them.

Thanks to the support of the Consulate General of Italy in San Francisco, it was possible to analyze the structure of the Italian start-up in Silicon Valley, working on a sample of 65 companies out of the hundred existing:

Almost 50% of start-ups have been established in the last two years (2014-2015). 40% have fewer than 10 employees and 90% less than 50. They are mainly active in the ICT sector. Only 15% of the start-ups considered are university spin-offs. The companies surveyed raised $ 645 million in funding. For 60% of start-ups, funding ranges from 0 to 2 million dollars. The founders are aged between 30 and 40 (50% of the total) or over 40 (40 percent). They have an Italian master's degree and in 18% a research doctorate. In 40% of cases they are on their second experience as a founder.

6.3.3 Events e community

NA Start Up

Na Start up is a community that organizes itinerant events in the city of Naples to give the new founders of start-ups the opportunity to meet other companies and possibly network with them. In this way entrepreneurs, journalists, professionals, geeks, curious, technicians, programmers, industrialists, etc. they meet to follow the speeches of the startup representatives.

At the end of the presentations, a Wi-Fi-based system allows participants to vote and win the proposal they liked the most. Victory is not rewarded with money or contracts but, in line with the spirit of the initiative, with greater visibility. Visibility, however, is guaranteed to all participants.

TIM W Cap

In the San Giovanni a Teduccio University Complex, Federico II hosts the Innovation Hub born from the collaboration between TIM and Cisco Italy, world leader in the networking and IT sectors. This translates into a demo area, dedicated to Industry 4.0, Smart City, Cyber Security and Multi Cloud and equipped with platforms and technological assets available to design, develop and test new applications in these sectors.

The choice of location is designed to foster osmosis between the academic and industrial worlds.

Napoli Start up Week end

Naples was home to one of the largest international start-up events: Startup Weekend, that is a three-day program where aspiring entrepreneurs can experience startup life. In hundreds of cities around the world.

The event, conceived by the American Andrew Hyde, includes a 54-hour marathon in which all participants develop their business idea in a single weekend with the help of mentors and industry professionals.

The last edition in 2017 which was won by Sheralo, a web platform for sharing disused objects with a high potential for creative recycling.

6.3.4 Main Start-ups in Naples Start up Ecosystem

Startup Name: Megaride

Industry: Automotive, A.I.

Headquarters: Naples

What they do: a software house that develops algorithms to simulate what happens when a racing car or a motorcycle is launched on the track at maximum speed.

Megaride was founded in 2016 as a software house, testing center, smart mobility provider, with the aim of becoming a reference point in the development of advanced models for real-time simulation of vehicle dynamics on the road, in the

automotive and motorsport sectors, and in the supply of software products for the optimization of vehicle performance and smart mobility.

Startup Name: E Lysa

Industry: Health

Headquarters: Naples

What they do: E-LISA Srl is a startup founded in September 2016 that conducts scientific research and develops digital solutions in the ICT sector in the field of personalized medicine, in particular for orthopedics and traumatology. The main innovative tool is the 3 d print which allows the surgeon to receive a 3D model of the fracture under examination in less than 48 hours.

Startup Name: Bazzole

Industry: Social influencer Marketing, A.I.

Headquarters: Naples

What they do: Buzzoole is an Influencer marketing platform that uses artificial intelligence to connect Brand and Content Creator.

Buzzoole uses proprietary technology based on artificial intelligence to create the perfect match between Brand and Influencer

Startup Name: Jafood

Industry: Food Delivery

Headquarters: Naples

What they do: Jafood is the first Premium food delivery in Italy. This start-up has the ambitious goal of combining the well-known home delivery service through technological and innovative systems with an additional service that allows users to try the experience of high-end restaurants comfortably in their own homes.

6.4 Second Level of Research process:
Main evidence from the interviews with the directors of certified incubators.

Massimo Varrone

Opereting Director of the Campania new steel incubator

Gianni Riotta

Director of Luiss en Labs Acceleretor Roma

Vicepresident Council US Italy, columnist LaStampa

In this paragraph we will report the main information obtained from the interviews with the two directors of start-up incubators in Rome (Gianni Riotta) and Naples (Massimo Varrone) with respect to the 3 dimensions identified in the previous table of start up ecosystem: Actor, Resource, Geographic Context.

Both research contexts are UBAs but, as anticipated, and as will be further described below, they have opposite models. Furthermore, data on already-accelerated startups are useful for describing a specialization of the two accelerators. The main businesses of these startups by CNS deal with digital transformation, the implementation of artificial intelligence, the use of the opportunities offered by the Internet of Things, or leveraging the combination of social innovation and health. On the other hand, the main businesses of the startups accelerated by LEL are digital transformation, marketplace, and software development.

Another interesting element is a past-looking one – namely, the achievements of startups accelerated in CNS and LEL. The number of startups of the CNS accelerator that achieved significant fundraising is about 15. The total capital raised by startups in the CNS accelerator is over 2 million euros. The startup that raised the most funds is SyenMaint, with total fundraising of 250,000€. On the other hand, 80% of startups

accelerated by LEL managed to raise at least 300,000€. The startup that has collected the highest funding is 2Hire, which reached fundraising of 5 million euros.

The success the two UBAs brought to the two startup ecosystems is mirrored in the exit strategies; indeed, during the last two years, two startups achieved an exit strategy in the CNS accelerator, while six startups accomplished an exit strategy in the LEL accelerator. However, no startup of the two accelerators has yet managed to enter the stock market.

Qualitative data are interesting and useful in obtaining insights into how the two UBAs performed, though the ways to do that are also important. Indeed, in terms of the development of startups and the viability of these processes for the UBAs themselves interesting answers emerged. The business model of the CNS accelerator is win-for-call or pay-for-support; thus, it does not become a member of the startups with which it works. If the startup receives funding through calls, the support is free, while if the startup fails to obtain funding, it must pay for the support services. Conversely, the business model of the LEL accelerator is equity for support. In any case, the accelerator becomes a stockholder of the startup.

In both UBAs, the universities never fully enter the social structure except for startups that spun off from university departments.

For the CNS accelerator, the exit strategy is not a fundamental question; however, the contrary is true for the LEL accelerator, due to its involvement in the cap table. As confirmation, the LEL accelerator has agreed with startups, since the beginning, that the main objective is to obtain a financial result within five years. Consequently, the LEL accelerator defines itself as a "pure financial operator" because a large part of the cap table is covered by a related investment fund. Conversely, startups accelerated by CNS seem less interested in achieving an exit strategy. These considerations are confirmed by the directors we interviewed, as reported in the following excerpts:

"At CNS we support the economic logic rather than the financial one; thus, we work to reconvert the territory and move from the so-called 'heavy industry' to a 'thinking industry' through innovation promoted by startups."

(M.Varrone)

"LEL fundamentally acts as a financial operator. The main goal is to ensure that the investment fund that is part of our UBA may obtain an ROI as high as possible, making the startups we incubate as attractive as possible to be incorporated by large companies."

(Gianni Riotta)

In the next sub-sections, the findings are presented with reference to the three perspectives – actors, geographical context, and resources – that emerged from the literature/main international Start up Ecosystem' report and summarized above in Table 2 to describe the research process. Excerpts from the interviews have been reported to stress the most relevant considerations.

Actors

First, UBAs support the entrepreneurs-to-be through the core competence, that is, through managerial transfer thanks to a team of specialized mentors. Many mentors are recruited due to their university backgrounds, viz., many of them – as well as entrepreneurs – have previous experience in university teaching.
In this regard, the Operating Director of the CNS UBA stated that:

"Our mentors are quite young but experienced. Therefore, they align so much with the way of thinking of the potential startuppers. We selected them based on their previous experience and on their specialization in certain industries."

(M.Varrone)

On the other hand, the Director of the Investment Fund at LEL UBA paid more attention to the background than to the age or specialization. Indeed, he said that:

"Our team members are mostly financial specialists. They coordinate the rest of the team, but we lever on what we know we can do best, namely, increase as much as possible the profitability of our funds." (M.Riotta)

The two UBAs behave differently because mentors are chosen based on different features. One more difference that emerged from the interviews stands on the role of the university community in mentoring the acceleration program. At CNS, the community is mainly instrumental for startups, while it is the opposite at LEL, due to the financial-based goals.

One more element is worth being recalled from the interviews and with reference to actors, namely, the role of past startuppers, currently leading their firms. No involvement emerged in any of the two UBAs. Therefore, previous experience can simply be recalled by the UBA teams.

Geographical context

Due to the features of the context of the UBAs, accelerators are supported, in turn, by universities, which often provide logistical solutions and laboratories. Similar considerations apply to the startups, as they benefit from the internal viability of the UBAs to develop in fertile ground.

A consideration stressing the topic above emerged from the interview with the Operating Director of the CNS:

"The set of local conditions made the difference in our development and in the growth of the startup; the university provided something that can't be bought anywhere else, namely, the propensity to innovate. It is infused in the university community, in research groups, in the history of previous industrial relations, and so on. It really made the difference for us and for startups."

(M.Varrone)

Similar considerations were also offered in the interviews at LEL; in any event, the context is seen as wider, as the participation of corporate investors, venture

capitalists, and other firms acting in similar or connected industries expand the opportunities to meet startuppers' needs and show them the right way to start their businesses.

Moreover, relations play a relevant role as, thanks to the accelerator, startups are inserted into larger circuits and ecosystems. Investor matching is also favoured, expanding the nature of the startup ecosystem, from local to international; in some cases, partnering local startups with international firms was found to be useful. This consideration is particularly true at LEL, as the Director of the Investment Fund carefully described:

"We are not just a single entity as a consultancy firm; we are a hub, and we group multiple actors via a continuously growing set of relations to widen the opportunity a startupper may find while setting everything to challenge the market. Investors and other firms acting as potential partners shape a unique combination to fund and launch a business."

(G.Riotta)

Finally, the context is also shaped differently from an equity-based perspective, as for the CNS UBAs, the university is an important part of the cap table (49%). Meanwhile, in LEL the university has no share at all and takes care of mentoring, co-branding, and relations-building, also abroad.

Resources

Both UBAs report increasing the growth of the startups through several resources and their combination; indeed, core competence, technical and advanced resources, relationship, and prestige played fundamental roles. All in all, both CNS and LEL report promoting the growth of accelerated startups through these multiple resources. Additionally (and one of the most relevant results), startups are offered a series of IT solutions for technological development, while logistical resources – such as the operational headquarters – are offered. This is a feature strictly pertaining to a university-centred domain, as the Operating Director at CNS stated:

"There is a variety of knowledge one can't properly understand from the outside. Being one of the oldest universities with a multitude of departments led us to count on whatever we need. Thus, the main effort has been the organization of knowledge flows and its recombination in startups. As it concerns the recombination, the alignment between the learning orientation of startuppers and the teaching approach of university members is crucial in favouring the success of a new business."

(M.Varrone)

Moreover, prestige is a distinctive feature of the two university-based accelerators. Many startups enter the stage as unknown entities, and the accelerator is committed to promoting them through public events, competition notices, and other means, such as university seminars. This consideration is tied to relationships as resources brought by the UBAs to the startup ecosystem and to the startups looking for partners, investors, and external mentors, too.

Both accelerators usually contribute to startup development through support that they define as *"making resources available: tangible, intangible, monetary"* (at CNS) and *"organizing matches with investors"* (at LEL); additionally, two relevant actions are to achieve fundraising and pave the way for open innovation. Nevertheless, two different approaches have been identified with regards to the process of switching from business idea to execution phase, as well as with reference to achieving an exit strategy. The LEL accelerator is not involved in switching to the execution; indeed, it chooses startups that already have at least one MVP (Minimum Viable Product). On the other hand, CNS supports the switch from business idea to execution phase; indeed, CNS accepts early-stage projects.

Finally, as an interplay between relations and prestige, several startups in the accelerators scaled the market and met market players thanks to the academic background of the accelerator; therefore, the counterpart elicited confidence due to the involvement of the university. This statement is supported by the response provided by the Director of the Investment Fund at LEL:

"…Being a UBA is an opportunity, both for startups and for the UBA itself; indeed, we are in an advantageous condition, since we don't need an introduction, as we are a UBA and this gives us credibility and inspires trust in startuppers. They believe in the power of knowledge for continuous improvement and consider a university-based entity as the right partner…."

(G.Riotta)

6.5 Second Level of Research Process: Main evidence from the interviews with start-up founders.

Flavio Ferroni

CEO of MegaRide.

Assistant Professor of Applied Mechanics.

Simone Ridolfi

CEO of Moovenda and OffLunch.

The interviews with the founders of the main start-ups included in the ecosystems of Naples and Rome were, like the previous ones, conducted in narrative analysis mode

following the three reference variables identified by the study: resources, actors, and geographical context.

The founders of the start-ups interviewed are Flavio Ferroni, CEO of MegaRide, and Simone Ridolfi, CEO of Off Lunch and Foodys.

Among the main results of these interviews, one condition is immediately evident: that the start-ups established in ecosystems often significantly adapt to the configuration of the reference ecosystem, as well as adapt and shape their own development goals.

These considerations are confirmed by the founders we interviewed, as reported in the following excerpts:

"...At MegaRide we have never been interested in fundraising. We have had many very attractive proposals from venture capitalists which we have refused in favor of organic growth. Not even the debt capital market and bank loans have ever interested us... "

(F.Farroni)

"...At OffLunch and Moovenda we constantly aim to involve new investors in order to increase our pre-money value ... We propose a very convenient capital market for investors who participate in investment rounds and who hope to be able to participate in the economic results as soon as possible... "

(S.Ridolfi)

Another important consideration should be made regarding the founders' perception of the role that the incubator, in which the two start-ups of the respective ecosystems of Rome and Naples are inserted, had on the development of their start-ups.

"...at MegaRide we started doing open innovation: it all started immediately after my graduation when the Ferrari management called for a PhD aimed at the production of a software tool to improve the performance and grip of racing vehicles on the road ... Among the various models, mine was chosen, the MegaRide one ... Our incubator, Campania New Steel, has oriented us to business and put us

in contact with a series of actors able to transfer important entrepreneurial skills in the field of business development…"

(F.Farroni)

"…At Moovenda it all started with the Rome start-up week and from the first step of the incubation path in Luiss and labs where we received the first 80k mixed between money and services, financed by the first investment fund—L Ventures—which immediately entered into our cap table…"

(S.Ridolfi)

The two entrepreneurs have two distinctly different positions on the role of the university in supporting the early-stage phases of their stars.
Flavio has definitely established a close link between the university and his company, which was born as an academic spin-off. Today, Flavio is an assistant professor researcher on a fixed-term basis at the computer engineering department of the University of Federico II. Simone stopped at his three-year degree and never thought about taking advantage of the opportunities that universities offer to students, professors, and researchers to implement academic spin-offs.

"...following the partnership with Ferrari, other car companies, such as Ducati, asked us to purchase licenses for the model, thus giving us the intuition to do business. We have therefore implemented everything through an academic spin-off to which I joined by virtue of the fact that today I carry out my role as Assistant Professor and Researcher (Rtda) at the departments of Mechanics and Energetics of University of Naples Federico II."

(F.Farroni)

"…Unfortunately the entrepreneurial activity with all its implications did not leave me time to finish the master's degree course after the three years ..." .... "... I learned to be an entrepreneur in the field; the university experience has not given me tools and skills to facilitate learning..."

(S.Ridolfi)

6.6 Second Level of Research Process:
Main evidence from the interviews with professors and assistant professors.

Antonio Pescapè

Full Professor Ingegnieria Informatica and Chair of the spin-off of the University Federico II of Naples.
Scientific Director of DIGITA Academy.

Nadia Di Paola

Assistant Professor of Business Venturing and Blockchain Management at the University Federico II of Naples.
Editor-in-Chief of the International Journal of Entrepreneurship, COST Association MC substitute.

Silvia Pulino

Associate Professor of Business Administration at John Cabot University
Direct, JCU Institute for Entrepreneurship.

Riccardo Maiolini

Associate Professor of Business Administration at John Cabot University, Rome.
Adjunct Professor at LUISS Business School.

Nicola Cucari

Assistant Professor of Management at University *La Sapienza* of Rome.

In chapter 4, about local institutions as a means of supporting the birth and development of new and innovative business, we focused specifically on the role of universities.

As already described in the paragraph dedicated to the research methodology and the methodology process that we applied to this study, the professors of the main universities of Naples and Rome were also interviewed in narrative analysis mode.

In this section, we report the results of the interviews with professors and assistant professors engaged in academic entrepreneurship at University Federico II of Naples, University La Sapienza of Rome, Luiss Guido Carli University of Rome, and John Cabot University of Rome.

The interviews were developed with some of our guidelines to highlight the specific commitments of the respective universities in supporting the start-ups of the reference ecosystem. The specific purpose was to detect emerging or already existing initiatives and the limits or prospects in the action of the universities in the start-up ecosystems of Naples and Rome, as well as any resources and tools that, according to the interviewees, are currently lacking and thereby preventing universities from performing at their best in supporting entrepreneurship.

Il professori e I ricercatori delle Università intervistate sono: Antonio Pescapè Full Professor Ingegnieria Informatica, chair of the spin-off of University Federico II of Naples, and Scientific Director of DIGITA Academy; Nadia Di Paola, Assistant Professor of Business Venturing and Blockchain Management at University Federico II of Naples and editor-in-chief of the International Journal of Entrepreneurship, COST Association MC substitute; Riccardo Maiolini, Associate Professor of Business Administration at John Cabot University of Rome and adjunct professor at LUISS Business School; and Nicola Cucari, Assistant Professor of Management at University La Sapienza of Rome.

The first consideration of this analysis of the academic staff involved in the topic of entrepreneurship is to highlight a countertrend with respect to the previous interviews with the founders of start-ups in the start-up ecosystems of Rome and Naples and the directors of the incubators of the same ecosystems of start-ups. The countertrend in this section concerns the fact that, unlike previous comparisons, this comparison shows a rather similar model of functioning of the role of the university. While the Rome start-ups pursue very different logics from those of Naples, just as the Neapolitan-certified incubator has a completely different model from that of Rome, the role of the universities of Rome and Naples, according to the information received from the interviewees, is very similar.

"...The Federico II Spin-off Commission has decided not to develop spin-offs in which the university is part of the start-up cap tablel. We believe this is an advantage for those who found and carry on the academic spin-off start-up because the decision-making process would be much more cumbersome, having to convene the university spin-off commission every time. The spinoff status for start-ups is absolutely free and guarantees the founders many benefits..."

(A.Pescapè)

"...There is a lot of commitment on the part of the universities of the Lazio region in supporting start-up companies but I think they are somewhat behind the international excellence. Only a few years ago, the attention of Italian universities had been directed to the world of entrepreneurship but in any case only in the didactic field. As part of the financial support, I would like to point out a program of the University La Sapienza of Rome: 'Sapienza TalentLab,' in collaboration with LVenture Group, a private investment fund and naturally external to the university…"

(N. Cucari)

"...Federico II's commitment to developing academic entrepreneurship is not lacking. I believe that the university in the future must have a greater role in contributing to the start-up ecosystem because this would allow an increase in prestige in all three of our university's missions: Teaching - Research - 'Third Mission'.

Very often, the work of our departments is of a consultative nature and supports the development of ideas, but very rarely is the idea started, funded, and financed by the university ... We are more 'extrapreneur' than 'entrepreneur"..."

(N.Di Paola)

"…The universities of the Lazio region have excellent university research centers and LUISS and John Cabot, among the private ones, those with greater attention to entrepreneurship from different points of view (Doc Tre, JCU Weekend of Start-ups). However, the latter struggle to build concrete relational bridges with the business world and above all with the world of venture capital…"

(R.Maiolini)

Another important aspect that emerged from our interviews is the widespread awareness among professors and researchers that investing in entrepreneurship teaching is an advantageous choice: Students who benefit from learning for entrepreneurship develop knowledge of world skills and essential skills and attitudes, including creativity, initiative, tenacity, teamwork, risk awareness, and a sense of responsibility.

Italian universities, in particular those of Rome and Naples, are doing a lot to become more "entrepreneurial and start-up oriented" despite the great limits that differentiate us from the entrepreneurial ecosystems of excellence.

"...I notice both from the point of view of numbers and performance an imbalance between the spin-offs born from the various departments of Federico II. There are very dynamic departments and others that have never made a spin-off ... The economics departments of Federico II of Naples have the great task of promoting the entrepreneurial culture and spreading it in all the departments of the university particularly by supporting the departments of a less technological and more humanistic nature, which by their nature are less used to creating spin-offs..."
(A.Pesapè)

"*...There are three issues to accelerate the process of diffusion of academic entrepreneurship. The first is a question of timing, that is, the earlier, the better. I have had experience with master's-degree, three-year-degree, and high school students. With those of the master's, mental rigidity is practically irrecoverable; with the three-year-degree students, rigidity is already established, but with enthusiasm and an approach that is even a little playful, it is possible to scratch it by setting a more agile mentality. High school kids exposed to entrepreneurship make enormous progress in a very short time ... The second is a question of intensity. A course, an event, or a book is not enough; it is important to expose young people in many different ways to the concept of entrepreneurship and everything that revolves around it (mindset, social entrepreneurship, soft skills, etc.) ... The third is the idea of creating a system: We win if we are placed in a 'fertile' context, in which the ecosystem really works. For this reason, it is important that the actors of the system are aware of their role and positioning, do not feel threatened by the excellence of others, and are generous in giving or restitution towards the system. We live this concept every day, with structured programs for schools but also in an informal way with our network of contacts...*"
(S.Pulino)

"...We need to think about an important bureaucratic aspect and that is that of the regulations of professors or researchers who want to found a start-up, especially if made through a spin-off. The departmental regulations should further favor this dual 'entrepreneur - professor' function and therefore protect academic staff who want to embark on business adventures. This could give an important boost to the spread of an academic entrepreneurial culture..."

(N.Di Paola)

"…In my opinion, a first opportunity for the dissemination of entrepreneurial culture within Italian universities can be the realization of 'extracurricular activities,' in particular with the creation of brain-storming and contamination opportunities through shared spaces that universities could provide, also available in co-working mode…"

(N.Cucari)

From what emerged from the interviews, it is evident that the Italian entrepreneurial academic culture has not yet spread sufficiently, especially as compared to American university contexts. As we have pointed out, one of the main obstacles is the lower presence of capital and investment funds connected to Italian universities.

On the other hand, it must be said that the commitment of the universities of Rome and Naples with regard to entrepreneurial education is considerable (and the results of the interviews that follow testify to this) (Paolucci et al., 2019; Carayannis et al., 2003; Clark et al., 2020)—namely, the set of teachings with the intent of equipping students with the knowledge, skills, and motivation to encourage entrepreneurial success in a variety of contexts. Entrepreneurship education is about content, methods, and activities in support of the creation and development of knowledge, skills, and experiences that make it desirable and possible for students to start and participate in creation processes of entrepreneurial value.

Experts—both professors and professionals—have finally realized that many university students have the intention of starting a new business. Intervention through training courses from the early years of university is essential to ensuring that students develop adequate skills and attitudes.

The results of the interviews show that the programs of the universities of Rome are more structured than those of Naples, even if in the latter the ground is being prepared for a disciplinary extension. Come emerge dalle interviste le attività in direzione "Entrepreneurship Education" della Federico II pur essendo collegate a Network importanti, anche internazionali, puntano ad un rafforzamento strutturale che permetterà di ottenere input organizzativi interessanti anche attraverso iniziative interne.

"…At John Cabot, we have a program called 'Learn-Do-Share' that we do in the classroom with real start-ups and a very well-structured mandatory pitch competition. 'Learn-Do-Share' brings real companies and real problems into the classroom, allowing students to apply theoretical knowledge to real-world situations. Typically, companies brief students who then work in teams, supervised by a professor, to solve problems or seize opportunities. The work spans several weeks and concludes with an oral presentation to the company, supported by a written analysis and recommendation…"

(R.Maiolini)

"…At Sapienza, for five years there has been specific teaching within the master's degree course in 'Business Management' dedicated to the world of start-ups and general entrepreneurship (also in English)…

I highlight two other initiatives of my university. The first is the Sapienza TalentLab. The Research and Technology Transfer Support Area (ASURTT) and the Saperi & Co Center, in collaboration with LVenture Group, have launched the

second edition of the incubation path for business projects aimed mainly at Sapienza students and graduates and open to the entire academic community. The incubation process aims to transform projects and business ideas into a Minimum Viable Product (MVP), for the development of an innovative product and the genesis of new start-ups, based on the methodology of the pre-acceleration programs of LVenture Group.

The second (coordinated by me) concerns a collaboration with Digital Magics for students of the excellence path of the MANIMP master's degree course aimed at introducing young people to a business incubator and offering them the opportunity to collaborate with the specialist team in the evaluation of entrepreneurial pitches…"

(N.Cucari)

"…At the Federico II Department of Economics, Management and Institutions, much improvement can be made from the point of view of entrepreneurship education by significantly expanding the boundaries of the 'first mission of the university.'

As past experiences, I would like to refer, first of all, to the experience we have had and will continue to have with EIT HEALT, which is a European institution with an organization focused on health. (It also exists in other sectors but we in the economics department are focused on health.) As part of this network, we in the economics department offer courses for all graduate degrees, with the aim of transferring managerial and entrepreneurial skills…

...I would also like to report a good experience in this sense made in the context of the 'Silver Entrepreneurship' named 'SILVER STARTERS,' namely, a program that aims to support citizens over 50 in starting and managing their own businesses. It is an eight-week course specifically designed to equip older citizens with the tools and knowledge they need for their businesses to thrive and overcome any barriers they may be likely to experience along the way…"

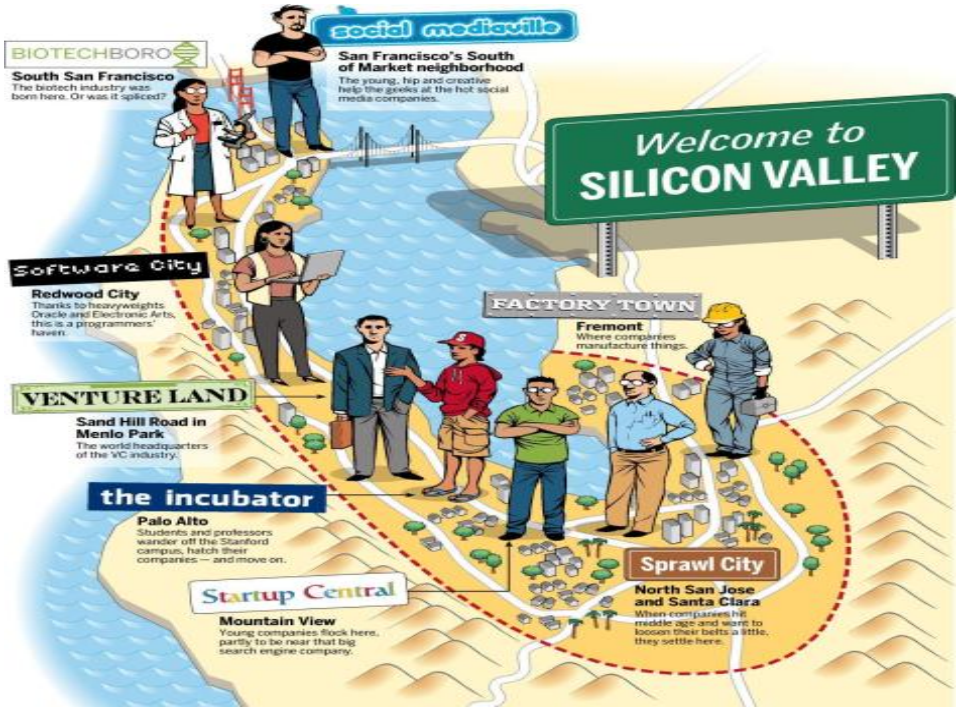
Silver Starters highlights the many choices available to those over 50 and gives a solid foundation in the essentials of establishing a new company."

(N.Di Paola)

6.7 A benchmark with a reality of excellence: Silicon Valley (San Francisco)

There are, of course, clear differences between the ecosystems of Italian start-ups and those of the United States. Italian start-up legislation has set up, among other things, a national register where the so-called "start-up innovations" of the country are present, and it has reserved incentives and incentives. Note that this register is NOT the distribution of start-ups in Italy as they are identified by the market in the rest of the world, but only identifies those companies that meet the requirements to define them in Italy.

Sample analysis carried out by various stakeholders in the last two years has shown that the convergence between the registry and the market is very low and that over 80% of "innovative start-ups" would not be defined as start-ups in other countries.



6.7.1 Silicon Valley: The archetype of the start-up ecosystem.

Silicon Valley is undoubtedly the most famous and productive innovation cluster in the world, with success stories such as Google, Facebook, Apple, HP, eBay, PayPal, LinkedIn, and Tesla and with an ability to attract money and human capital. `highly specialized from all parts of the world. 15 Chapter 3. The fundamental elements of an innovation ecosystem.

The evolution of Silicon Valley from a cultivation area to the first region of the innovation and creation of start-ups worldwide is complex and very articulated.

We will report some salient passages by drawing on the descriptions of Engel (2014) and Etzkowitz (2013), then integrate them with the narrative interview that Jim Spohrer, serial manager and venture capitalist, provided to us about both large companies and various start-ups.

At the beginning of the 1900s, a radio system was successfully marketed by a Stanford student, while in 1912, the invention of the vacuum tube, also at Stanford, launched the age of electronics. A few years later, in 1938, one of the most iconic start-ups in Silicon Valley, Hewlett-Packard, was born from the university, producing electronic devices such as oscilloscopes and measuring instruments. In this period, Professor Fred Terman played a fundamental role, serving as professor/mentor, encouraging his students to commercialize their research.

After the Second World War, thanks to the skills developed in several economic sectors, Silicon Valley attracted large companies such as General Electric, Kodak, and IBM, which established research and development centers there.

In 1980, there was a very important event: The federal government initiated a policy that allowed a new wave of business creation. Private investors could finance the commercialization of government-subsidized research. Berkeley and Stanford created their own technology transfer offices to maximize revenues from this opportunity, licensing their research to both large companies and start-ups created primarily by the researchers themselves.

At the beginning of the 1970s, with the birth of "Intel," the venture capital investment approach began for the first time. This era also saw the formation of a group of investors who are the founders of what are now venture companies.
Thus, Silicon Valley was born thanks mainly to a business development strategy carried out by Stanford University with the support of the government and businesses (Etzkowitz, 2013).
Of course, several players have contributed to making Silicon Valley "the first example" of a start-up ecosystem.

6.7.2 Main Berkley Universitity Program for "*connect student entrepreneur with UC Berkeley's startup ecosystem*".

The section of the University of Berkeley website dedicated to supporting students approaching the world of entrepreneurship is entitled with a very emblematic name "*Learn. Build. Fund.* "
Below is a roundup of initiatives from the University of Berkley to support the entrepreneurial initiatives of students, assistant professors and professors, divided into 5 macro-areas: Incubator, Student Groups, Entrepreneuship Assosetion, Competitions, Fellowships & Fraternities:

Incubators

- The House

The House is a startup institute built for Berkeley, and home to Berkeley's founders.

- CITRIS Foundry

CITRIS Foundry is the University of California accelerator for founders building deep technology companies. Provides seed funding, access to campus labs, and mentorship during our 12-month program.

- Free Ventures

Semesterly student-run accelerator program for both undergraduate and graduate students. Participants receive 2 upper-division CS units, need-based funding, industry-specific mentorship, weekly workshops, and workspace.

- Catalyst@Berkeley

Student-run health tech incubator that helps interdisciplinary teams of students develop technical skills and navigate through the design process to the development of a viable prototype and business plan to bring it to market.

- SkyDeck

Incubator program for UC Berkeley startups. Provides workspace, unique programming, speaker series, and mentorship. A collaboration between the College of Engineering, the Haas School of Business, and the Office of the Vice Chancellor for Research. Applications in March and September annually.

- Venture Lab

Incubator program and resource center for undergraduate and graduate students. Provides workspace, personalized mentoring, and a community of student-entrepreneurs.

Twelve Week Spring Semester incubator that takes hackathon projects (from Cal Hacks) and helps turn them into non-profits, startups, and open source projects.

Student Groups

- Machine Learning at Berkeley (ML@B)

Student group for everything machine learning at Cal. Members organize events on campus, work with companies on applying ML to industry, and publish papers for moonshot ideas.

- CET Student Association

Student group organizing speaker series and events relating to entrepreneurship. Part of the Center for Entrepreneurship and Technology.

- Venture Strategy Solutions

Student consulting group focusing on high growth startups in the Bay Area.

- Computer Science Undergraduate Association

Computer Science club open to all students interested in computer science. Holds a variety of both technical and social events throughout the year including hackathons, info sessions, social parties, and gaming nights.

- Berkeley IEEE

Electrical engineering student group. Holds technical workshops and infosessions throughout the year.

- Berkeley Innovation

Undergraduate human-centered design group. Members come from a wide range of disciplines, but share a love of design thinking and innovation. Provides hands-on experience with the entire design process, from conducting user research to building and marketing prototypes. Holds designathons.

- Innovative Design

Student club for graphic designers and photographers. Conducts a DeCal and holds workshops covering a broad range of design topics.

- Mobile Developers @ Berkeley (MDB)

Student app development group that works on all mobile development projects (iOS/Android) and have worked on dozens of past tech consulting projects.

- Blueprint

Team of UC Berkeley students that develops pro bono software for non-profits and promotes technology for social good.

- CodeBase

Software development club that is building a community of passionate and driven engineers that work together on various industry projects (consulting, development, etc).

Entrepreneurship Associations

- Berkeley Entrepreneurs Association

Entreprenurship association providing a variety of resources to members. Writes a weekly newsletter featuring job postings. Hosts both formal and informal events.

- Berkeley Postdoctoral Entrepreneurs Program

Entrepreneurship association for the postdoctoral and graduate communities. Provides tools, mentoring, and a platform for science-business communication to encourage research innovations to move into the marketplace.

- CalFounders

Entrepreneurship association for UC Berkeley alumni. Holds members-only meetings which serve as an informal advisory board for each entrepreneurs' independent companies.

Competitions

- LAUNCH: The UC Berkeley Startup Competition and Accelerator

Accelerator and competition for early stage UC-affiliated startups. Provides a rigorous curriculum from world class faculty, intensive mentoring, and the tools to get to fundable.

- Cal Hacks

Yearly collegiate hackathon for students interested in creating new software and hardware products. Lasts 36 hours and takes place in the fall semester.

- Big Ideas@Berkeley

Annual social impact startup competition. Provides funding, support, and encouragement to interdisciplinary teams of students. Run by the Blum Center.

- Global Social Venture Competition

Annual social impact business plan competition. Run collaboratively with a number of universities around the world and the Lester Center.

Fellowships & Fraternities

- Kairos Society Fellowship

Entrepreneurship fellowship connecting like-minded individuals to help members achieve their entrepreneurial goals. Provides one-on-one mentorship and resources to members. Hosts both internal and external events.

- Haas Venture Fellows

A select group of Berkeley MBA students at the Haas School of Business who do real world projects to strengthen ties between Bay Area entrepreneurs, the venture capital industry, and the Lester Center.

- Accel Scholars

Joint program run by Accel and UC Berkeley EECS department that empowers undergraduate engineering students through access to Silicon Valley mentorship and curriculum.

6.7.3 Main Start-ups in Silicon Valley

Startup Name: Aurora
Industry: Machine Learning

Headquarters: San Francisco

What they do: Aurora is helping bring the best of the self-driving technology to people with the help of rigorous engineering and machine learning. It has developed a self-driving platform called Aurora driver that facilitates safe movement of goods and people.

Startup Name: Carte
Industry: Fintech

Headquarters: San Francisco

What they do: Carta is an equity management platform for all kinds of companies and investors. The services it offers includes Cap Table Management, 409A valuations, scenario modelling, and private company liquidity services among the others. One of the top startup companies in Silicon Valley for 2020, this venture works with some of the best VC companies in the US

Startup Name: Stripe

Industry: Digital payments, Fintech

Headquarters: San Francisco

What they do: In September 2019, before Covid advanced e-commerce by years in a few weeks, Stripe was bypassing WeWork and Airbnb to become America's largest unicorn. A year and a half later, in March 2021, the value of the company founded by brothers Patrick and John Collison (who in 2020 was among the richest under 30 in the world) which provides software infrastructures for Internet payments to individuals and companies is almost tripled. After a $ 600 million funding round, its valuation rose to $ 95 billion.

Startup Name: Instacart

Industry: Grocery delivery

Headquarters: San Francisco

What they do: : Instacrt is a kind of Grocery Uber. Potential grocery buyers sign up and download the Instacart app so they can deliver groceries to their local customers. Sometimes customers can also request their favorite Instacart grocery shopper. After the $ 265 million funding round ended in March, the value of the grocery delivery app jumped to $ 39 billion. Its founder is Apoorva Mehta, whose assets are estimated by Forbes at $ 3.5 billion

Startup Name: Eaziee

Industry: Hospitality

Headquarters: San Francisco

What they do: Eaziie allows hotel and hospitality workers to arrange taxi, limo and shuttle transportation for their guests through a simple-to-use interface. The Eaziie dashboard allows hotel employees to track drivers' live position, estimate time of

arrival and see vehicle information. Eaziie partners with professional taxi and limo fleets to ensure their optimizations reach all parties.

Startup Name: Myrace
Industry: E Sport

Headquarters: San Francisco

What they do: Many athletes who compete in races often have trouble receiving the proper statistics from their performance. MyRace is looking to change this by partnering with race organizers, timing companies and sponsors to ensure athletes receive proper results and analysis, along with the ability to discover likeminded competitors.

6.7.4 Some evidence from the interview with Jim Sporher.

Jim Spohrer

Investor and Serial Manager

Founding Member of the International Society of Service Innovation Professionals

We have chosen Jim Spohrer, investor and serial manager, as a representative actor of the San Francisco Silicon Valley scenario. He is a founding member of the International Society of Service Innovation Professionals.

In this case, the choice not to interview professors or incubator directors, as was done for the ecosystems of Naples and Rome, was dictated by the fact that she would not have been a 360-degree representative figure like Jim Sporher, given his most transversal experiences from which to derive as much generic and appropriate information as possible for purposes of this comparison.

The interview with Jim Spohrer began with a general description of the San Francisco scenario and then continued with a list of the main Silicon Valley stakeholders, according to Spoher:

"…Silicon Valley has many, many stakeholders in the start-up ecosystem. Start-ups (Databricks and thousands of others), venture capitalists (Sequoia, Benchmark, Andressen Horowitz, Kleiner Perkins, etc.), universities (Stanford, Berkeley, SJSU, UCSC, SFU, and many others), goverment labs (Lawrence Livermore), big companies that acquire start-ups (Google, Intel, Cisco, etc.), big companies that use start-up offerings (Facebook, NVidia, Wells Fargo, Chevon,, etc.), big company labs (IBM Research - Almaden, Walmart Labs, etc.)…"

(J.Spohrer)

The goal of investigating and describing the Silicon Valley start-up ecosystem is based on the desire to do a benchmarking analysis for our Italian ecosystem (split in two: Rome and Naples) using Silicon Valley as a reference.

Thanks to the results of the interview with Jim Sporher, supplemented by various reports and dewriting contributions available online, we describe all the actors who, over the years, have contributed to increasing the mechanism for creating innovation and businesses. The constituent elements of this success, according to the aforementioned contributions and the interview given by Spohrer, are as follows.

Investors:

Since the first start-ups, there has always been the investor component, which, in addition to providing large sums of money, provides support for management to temporally compress and, thus, accelerate the growth process. In Silicon Valley, the start-up investor has become a real professional role, with an organizational model imitated all over the world.

From Spohrer's interview, two decisive cultural factors immediately emerged.

The first is that for the entrepreneurial culture of Silicon Valley, failure is not seen in a negative sense but, instead, as a valid starting point. The second is that investments by venture capitalists are not made solely to participate in future economic results but also occur because some players, through the investment, are interested in becoming part of a new reality from which to capture new competence and soft skills.

"…In 2000, I worked in the technology department of IBM and through venture capital we were already investing in many start-ups. Many of these failed but we were interested in hiring and having access to their CTO to expand our technologies..."

(J.Spohrer)

Open innovation between start-up and large companies:

Not only is Silicon Valley the birthplace of the headquarters of many companies but, also, almost all major global players have transferred their R&D facilities there. Large companies contribute to the start-up ecosystem of the California region in many ways: They are early customers of new business ventures, especially B2B, they

supply entrepreneurs themselves to the ecosystem, they have divisions that carry out acceleration activities and investments in start-ups, and, finally, they are often the main architects of start-up exits through acquisitions. Many large companies scout start-ups mainly to draw on artificial intelligent algorithms

"…at IBM, we were also interested in the profile of the customers of the start-ups we purchased to see if they were the same as ours or if they differed ... We aimed more at acquiring resources, skills, and information and not so much at the economic value of start-ups…"

(J.Spohrer)

"…in Silicon Valley, there are many examples of open innovation between start-ups and large companies: collaboration on open-source data and AI—for example, Horovod started at Uber/start-up and many big companies contribute to the Horovod project—so start-ups and big companies collaborate in open source and open innovation frequently around AI, since it is so hard, and so far from being solved…"

(J.Spohrer)

University:

As we have seen, Stanford (followed by Berkeley) performed the function of the anchor tenant, attracting large companies for research and development and government funds to Silicon Valley. From universities, the most "disruptive" innovations were born, and thanks to entrepreneurial education and the work of professors and researchers, these have been translated into globally successful companies. In summary, universities in Silicon Valley have the role of educating

students from both technical and entrepreneurial points of view, attracting the largest companies in the world for research and development, managing to concentrate laboratories and a lot of human capital specialized in one place, and being able to make technology transfer with research done in collaboration with the state.
In the United States, the university is connected to the world of venture capital, while in Italy, it doesn't work the same way. Even in the start-up ecosystem of Rome, where, compared to that of Naples, there are certainly more investment funds and venture capital, there is no connection to the venture capital market within the university.

"….In Silicon Valley, but also in other U.S. start-up ecosystems, universities are often equipped with financial tools to invest in start-ups and to finance academic spinoffs..."
(J.Spohrer)

"…Universities provide two other important things to start-up ecosystems, namely, 'human capital' and 'research results' applicable to business ... Start-ups consider universities to be really important for the provision of human capital and soft skills…"
(J.Spohrer)

"…Stanford and Berkeley are the most influential universities in the Californian start-up ecosystem mainly in the Information Technology sector …"
(Jim Spohrer)

"…In California, universities have many programs to finance start-ups and academic spin-offs such as the University of Berkeley. This organization has an active presence on campus through associate programs or direct involvement, i.e.,

'The House Fund,' which is a pre-seed and seed-stage venture capital fund investing in Berkeley's top student, faculty, and alumni start-ups; Berkley SkyDeck Fund, which invests up to $100K+ in teams participating in the SkyDeck Accelerator; 50% of the fund carry goes back to UC Berkeley; 'Contrary Capital Decentralized,' a university-focused venture capital fund that invests $50K-$200K in companies run by students, faculty, and recent grads; ' Dorm Room Fund,' which is a student-run branch of First Round Capital investing up to $20K in student start-ups."

(J.Spohrer)

Of course, we cannot conclude with a description of the findings of this research without also mentioning the limits and problems that also affect the San Francisco start-up ecosystem.

Speaking of a crisis would probably be too hasty but Silicon Valley is no longer the definitive "garage" where inventions at zero cost are born.

In addition to being one of the richest regions in the world, Silicon Valley is becoming one of the most expensive. The median rent for a one-bedroom apartment in San Francisco before the pandemic was $3,700 a month. Increasingly severe fires, such as those that have hit the state in recent months, have contributed to a deterioration in the quality of life. Texas, which is a thousand kilometers away from California but where the cost of living is lower and taxes generally lower, has benefited from this. There, a sort of "alternative Silicon Valley" has been developing for some time.

In particular, Jim Spohrer, in describing a sort of "SWOT analysis" of Silicon Valley, among the weaknesses and future threats to the ecosystem, repeatedly insists on the cost of living, which has now become too high in Silicon Valley.

"…I think the weaknesses of Silicon Valley are definitely the high cost of living. Workers are starting to consider living in Silicon Valley to be very expensive … The big complaints are the high cost of living (employee salaries are high, and

some people jump around companies a lot), too many Type A personalities (some say unfriendly, career-success-driven), small houses (some people like big houses and they are super expensive here), traffic (can be a nightmare)…"

(J.Spohrer)

Conclusions:

Discussion and Implication of the Study.

We addressed the call for investigating the components identified in this work that represent a proposal for an interpretative model of start-up ecosystems at an international level. Each of them can assume more or less importance and influence depending on the geographical and socio-cultural contexts. The combination of insights from start-up ecosystems and the literature gave us the chance to establish a research framework based on actors, geographical context, and resources

Carrying on from a theoretical perspective, UBAs are showing that universities offer a hard-to-replicate mix of conditions for start-up acceleration. Indeed, results showed university prestige in the business context.

Also, within the ecosystems of Italian start-ups, awareness is spreading that the entrepreneurial culture can also be transmitted through higher university training courses such as those in the United States; a process of replicating overseas models in this sense could be feasible.

This proposal for an interpretative model starts from the description of the main components that constitute and form the start-up ecosystem as described in the initial image of the thesis: entrepreneurship and start-up companies; incubators accelerators that provide support to start-up companies; institutions, and in particular the role of universities; and accessibility to new technologies.

The initial model is enriched by three fundamental variables identified during the study: actors, resources, and geographical contexts, which are useful for consulting the components initially identified.

We then explored the components in each chapter and guided the interviews for the final results using the magnifying glass of these three variables. An interpretative proposal emerged that has, as its basis, the components identified at the beginning of the work, each enriched by actors, resources, and geographical reference context.

Implications of the study

This research has three kinds of implications as methodological, theoretical, and managerial advances emerge.

First, from a methodological perspective, the combination of insights from start-up ecosystems and the literature gave us the chance to establish a research framework based on actors, geographical context, and resources. These perspectives are not new on their own, though their combination proved to be useful for performing research in the start-up domain, with specific reference to the role of universities in supporting the development of new and innovative entrepreneurial forms and to UBIs. Indeed, the elements involved in investigating a specific accelerator cannot emerge from just one of the three perspectives. This mirrors the suggestions by Landström and Harirchi (2019), based on entrepreneurship being a reality-oriented academic topic, in need of a more complete understanding of its key features. Previously, McPhee (2012) had stressed the need to integrate lessons from theory and practice; thus, we believe that our research process may represent a solution for investigating complex and dynamic contexts such as start-up ecosystems, without discarding either theory or practice.

Second, from a theoretical perspective, we addressed the call for investigating the components identified in this work that represent a proposal for an interpretative model of start-up ecosystems at an international level. Each of them can assume more or less importance and influence depending on the geographical and socio-cultural contexts. The combination of insights from start-up ecosystems and the literature gave us the chance to establish a research framework based on actors, geographical context, and resources

Carrying on from a theoretical perspective, UBAs are showing that universities offer a hard-to-replicate mix of conditions for start-up acceleration. Indeed, the results showed university prestige in the business context.

Also, within the ecosystems of Italian start-ups, awareness is spreading that the entrepreneurial culture can also be transmitted through higher university training courses such as those in the United States. A process of replicating overseas models in this sense could be feasible.

Another implication under the theoretical profile concerns the very different aspects of the entrepreneurial cultures in the United States and Italy.

In Italy, the "culture of failure"—that is, an approach that considers failure as a possible opportunity for growth—is still considered an inviolable taboo. In America, however, awareness of one's mistakes is often the basis of success.

"Failure and innovation are inseparable twins" (Bezos, 2020).

"The people and businesses generally considered successful or luckier are usually also those most ready to take risks and therefore fail" (Branson, 2019).

This is one of the reasons why large investors are wary of those who have never failed and why the major venture capital is concentrated in start-up ecosystems in which the culture of failure is more widespread as a source of future success.

In Italy, the problem is that one feeds the other in a vicious cycle: The absence of capital in our innovation system and scarce resources limit the number of investments and, at the same time, greatly limit the possibility of failure—an intrinsic and inalienable element of this market.

Finally, from a managerial perspective, there are some important practical implications to offer.

The presence in the venture capital ecosystems of investment funds directly affects the short-term performance and timing between the transition from MVP and the early-stage and execution phases of the start-ups established within them.

Moreover, on the one hand, the mortality of start-ups has significantly decreased, while on the other hand, these emerging firms suffer from "dwarfism": They stay alive longer but cannot achieve great goals of scalable growth. It is crystal clear that the variety of knowledge and competence collected in a start-up ecosystem led by universities and other actors can represent a useful lever for supporting the road to success of start-ups

Universities and UBIs offer a mix that seems hard to replicate. The experience in managing learning processes, the role in local and international contexts, the ease of combining knowledge from multiple sources, and credibility represent the cornerstones of a university and, consequently, of a UBA, thereby offering not-to-be-missed opportunities to further ideas and transform them in start-ups.

The novelty of this research stands on the combination of multiple sources of knowledge and the interplay among actors attracted by universities (Condom-Vilà,

2020) –, context (Gobbe, 2014) – shaped around the start-up incubators and accelerators –, resources (Landström and Harirchi, 2019) – brought by and collected through universities and incubators –, especially knowledge (Johansen, 2010) – accumulated, combined, and transferred by the university –, and relations (Franco-Leal et al., 2019).

In summary, previous contributions favored the understanding of single features of the start-up ecosystem as successful in accelerating start-ups but offered only a partial view, due mainly to the novelty of this research topic.

The research produced another very important indication. On the one hand, the models of the incubators of the two start-up ecosystems examined in Rome and Naples, and, therefore, of the start-ups located within them, proved to be opposite: The Rome start-up ecosystem is closer to that of Silicon Valley.

On the other hand, with regard to the role of the universities of Rome and Naples in providing support, they are quite similar and, therefore, completely different from the benchmark of Silicon Valley.

In particular, although Italian universities show a willingness to become more and more entrepreneurial universities, their organization and methods of promoting an entrepreneurial culture differ in many aspects. This is the direct consequence, above all, of the context in which they operate. The Italian one is very different from the American one. The American context, unlike ours, is characterized by the presence of a large number of private universities. The great patrimony of the University of California, for example, allows for managerial-capitalist management with the possibility of making large investments.

It is no coincidence that the average age of an Italian entrepreneur is around 37, while that of an American entrepreneur is around 23.

References.

Books and academic articles

Abell P., Crounchley R., Millis C. (2001). Social Capital and Entrepreneurship in Great Britain, Entrepreneurship and innovation management studies, n 2 pp 119-144.

Agrawal A., Joshua S. Gans, Goldfarb A. (2017) What to Expect From Artificial Intelligence. MIT Sloan Management Review

Aernoudt R. (2004) Incubators: Tool for Entrepreneurship? Small Business Economics 23(2):127-135

Blank S. (2017), Why the Lean Start-Up Changes Everything, Harvard Business Review

Bygrave W.D. (2006) The Entrepreneurship Paradigm, Handbook of Qualitative research in Entrepreneurship, Edward Elgar Publishing inc.,

Bower J., Clayton M., (1995) Disruptive Technologies, Catching the wave, HBR

Bruneel J., Ratinho T., Clarysse B., Groen A. (2012) - The Evolution Of Business Incubators: Comparing Demand And Supply Of Business Incubation Services Across Different Incubator Generations. Technovation, Vol. 32, No. 2, pp. 110-121.

Calopa M.K. (2014), Analysis of financing sources for start-up companies, Management : Journal of Contemporary Management Issues, Vol. 19.

Carayannis, E. G., Grigoroudis, E., Campbell, D. F., Meissner, D., & Stamati, D. (2018). The ecosystem as helix: an exploratory theory-building study of regional co-opetitive entrepreneurial ecosystems as Quadruple/Quintuple Helix Innovation Models. R&D Management, 48(1), 148-162.

Castellion G. and Markham S.K. (2014), Myths About New Product Failure Rates. Perspective: New Product Failure Rates. Journal of Product Innovation & Management 30 pp. 976-979

Chesbrough, H. W. (2003). Open innovation: The new imperative for creating and profiting from technology. Boston, Mass: Harvard Business School Press

Calopa M.K. (2014)

Ciappei C., Schillaci S., Tani S. (2006), Gli incubatori di impresa, esperienze internazionali a confronto, University Press, Firenze

Clark D.N, Reboud S., Toutain O., Ballereau V. (2020), Entrepreneurial education: an entrepreneurial ecosystem approach, Cambridge University Press

Cohen, S., & Hochberg, Y. (2014b). Accelerating Startups: The Seed Accelerator Phenomenon. Available at SSRN 2418000. Retrieved from http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2418000

Cohen, Susan. "What Do Accelerators Do? Insights from Incubators and Angels." Innovations: Technology, Governance, Globalization n.8.

Corley K., Gioia D.A. (2011), Bulding theory about theory building: what constitutes a theoretical contribution?, The academy of Management review, 36, pp 12-32.

Cukier, D., & Kon, F. (2018). A maturity model for software startup ecosystems. Journal of Innovation and Entrepreneurship, 7(1), 14.

Cunningham B.J., Lischeron J. (1991), Defining Entrepreneurship, Journal of Small Business Management, n.29, pp 45-61.

Davids L. (1963) Characterisics of small business founder in Texas and Georgia, Bureau of Business Research, University of Georgia, Athens.

Deeb G. (2021) "How To Build A Startup Ecosystem". Forbes. Retrieved 2021-04-02.

Decker R., Haltiwanger J., Jarimin R., Miranda J, Where Has All The Skewness Gone? The Decline In High-Growth (Young) Firms In The U.S., Europan Economic Review, vol 86.

Dee, N., Gill, D., Weinberg, C., & Mctavish, S. (2015). Startup Support Programmes: What's the difference.

Drucker P. (1985) Innovation and Entrepreneurship. Practice and Principles. Harper&Row Publishers, New York

Dubois and Gadde, (2002), Systematic combining: an abductive approach to case research, Journal of Business Research, 553-560.

Edinson T. (1903) Men Women and Affairs, Springfield Sunday Republican [Springfield Republican], , Page 4, Column 4, Springfield, Massachusetts. (GenealogyBank)

Felsenstein D. (1994) " University-related science parks "seedbads" of enclaves of innovation?, Technovation vol 14 pp 93-110.

Fetters M., Patricia G. Greene, Mark P. Rice, The Development of University-based Entrepreneurship Ecosystems, Global Practices.

Fitzgerald, M., Kruschwitz, N., Bonnet, D., Welch, M.: (2013) Embracing Digital Technology: A New Strategic Imperative. MIT Sloan Management Review, Research Report

Fraiberg, S. (2017). Start-up nation: Studying transnational entrepreneurial practices in israel's start-up ecosystem. Journal of Business and Technical Communication, 31(3), 350-388.

Franco-Leal, N., Camelo-Ordaz, C., Fernandez-Alles, M., & Sousa-Ginel, E. (2019). The Entrepreneurial Ecosystem: Actors and Performance in Different Stages of Evolution of Academic Spinoffs. Entrepreneurship Research Journal, 10(2).

Gartner, W., & Katz , J. (1988, July). Properties of Emerging Organizations. The Academy of Management Review, 13(2), 429 - 441.

Goya et al. (2016) Understanding the challenges and strategic actions of social entrepreneurship at base of the pyramid, Emerald Onsight

Grimaldi R., Grandi A. (2005) - Business Incubators And New Venture Creation: An Assessment Of Incubating Models. Technovation, Vol. 25, No. 2, pp. 111-121

L. Guatri, La valutazione delle aziende. Teoria e pratica a confronto, 1990.

E. Gualandri e V. Venturelli, Nasce l'impresa, Business Angels: investitori a valore aggiunto, 2011.

Hernández, C., & González, D. (2016). Study of the startup ecosystem in Lima, Peru: Collective case study. Latin American Business Review, 17(2), 115-137.

Isenberg, D. (2011). How to foment an entrepreneurial revolution. The Babsos Entrepreneurship Ecosystem Project, 781(7).

Ismail, A. (2020). Building a university-centered Entrepreneurship Ecosystem: A Case study of the American university in Cairo. Entrepreneurship and Innovation in Egypt, 147-161.

Jonsen, K., & Jehn, K. A. (2009). Using triangulation to validate themes in qualitative studies. Qualitative Research in Organizations and Management: An International Journal, 4(2), 123-150.

Knight F.H. (1921) "Risk Uncertainty and Profit" , LtD, Boston.

Knopp L., (2007). State of the Business Incubation Industry. National Business Incubation Association, Athens, Ohio.

Kostoff N, Boylan R., Disruptive technology roadmaps, Technological Forecasting and Social Change, Volume 71, Issues 1–2, Pages 141

Kroll H., Liefner I., Spin-off enterprises as a means of technology commercialisation in a transforming economy, Technovation

Volume 28, Issue 5, May 2008, Pages 298-313

Yin, R. K. (2009). Case study research: Design and methods (4th Ed.). Thousand Oaks, CA: Sage.

Landström, H., & Harirchi, G. (2019). "That's Interesting!" in Entrepreneurship Research. Journal of Small Business Management, 57(sup2), 507-529.

Lee, S. M. (2018). Innovation for creating a smart future. Journal of Innovation & Knowledge, 3(1), 1-8

Maiolini, R., Giudici, A., (2019). Orchestrare l'innovazione per creare valore sociale. Sviluppo & Organizzazione (285), pp. 40-44

Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. Geography Compass, 12(3), e12359.

Matricano D. (2015) Lo studio dell'Impreditorialità, un approccio di indagine multidimensionale, Carrocci Editori, Roma.

Matricano D. (2019), Lo studio dell'imprenditorialità, Carrocci Editore

Mansoori, Y., Karlsson, T., & Lundqvist, M. (2019). The influence of the lean startup methodology on entrepreneur-coach relationships in the context of a startup accelerator. Technovation, 84, 37-47.

Marx K. (1964) Edizione italina del “Il Capitale”, Editori Riuniti, Roma.

McClelland, D. C. (1965). Toward a theory of motive acquisition. American Psychologist, 20(5), 321–333.

Mele C., & Russo-Spena, T. (2015). Innomediary agency and practices in shaping market innovation. Industrial Marketing Management, 44, 42-53

Mele C., Russo Spena T. (2019) Practising innovation , a sociomaterial view, Editoriale Scientifica.

Moore G. (2016) “Crossing the Chasm“, Harper Business Essentials United States.

Nielsen C., Lund M., (2018) The Concept of Business Model Scalability, Journal of Business Model. Vol 6 n 1.

Okhuysen G. and Bonardi J.P. (2011), Editors ‘ comments: The challenges of building theory by combining lenses, The academy of Management review, 36, pp 6-11.

Kirzner I.M. (1973), Competition and Entrepreneurship and Economic Development, University of Chicago press, Chicago.

Knopp L., (2007). State of the Business Incubation Industry. National Business Incubation Association, Athens, Ohio.

Meyer et al. (2011), Creating a university technology commercialisation programme: confronting conflicts between learning, discovery and commercialisation goals, Interscienca.

Maslow, A. H. (1943). A theory of human motivation. Psychological Review, 50(4), 370–396.

Parsons, T. , & Smelser, N. J. (1956). Economy and society. Glencoe, IL: Free Press

Petretto L. (2007) Imprenditore ed Università nello start up di impresa, ruoli e relazioni critiche. Firenze University Press.

Pittaway, L., & Cope, J. (2007). Entrepreneurship education: A systematic review of the evidence. International small business journal, 25(5), 479-510.

Paolucci E.; Sansone G.; Fiore E., (2019). "Entrepreneurship Education in a Multidisciplinary Environment: Evidence from an Entrepreneurship Programme Held in Turin". Administrative Sciences n 28.

Rizwana M., Padmalini S. (2019). From Startup to Scale Up: The Key Challenges. Indian Journal of Entrepreneurship

Sarasvathy S. (2001) Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency, Academy of Management ReviewVol. 26, No. 2

Sarasvathy S et al (2008). Designing organizations that design environments: lesson from entrepreneurial expertise. Organization studies, 331-350.

Salamazadeh (2015) Startup Companies: Life Cycle and Challenges

4th International Conference on Employment, Education and Entrepreneurship (EEE), Belgrade

Salido, E., Sabás, M., & Freixas, P. (2013). The Accelerator and Incubator Ecosystem in Europe.

Sipola, S., Puhakka, V., & Mainela, T. (2016). A startup ecosystem as a structure and context for high growth. In Global entrepreneurship: Past, present & future (pp. 179-202). Emerald Group Publishing Limited.

Schumpeter J.A., (1911), The theory of economic development, Harward University Press, Cambridge.

Smith, Adam (1975) La ricchezza delle nazioni, Grandi Tascabili Economici Newton, Roma

Sorrentino M., Matricano D., Guadalupi L., Tutore V., Andreottola F., (2012). "The Creation of Academic Spin-offs: Evidences from Italy," DSI Essays Series, DSI - Dipartimento di Studi sull'Impresa, vol. 27.

Stolterman, E., Fors, A. (2004): Information technology and the good life. Information Systems Research, pp. 687–692

Taibi L. Lenarduzzi T. (2016) MVP Explained: A Systematic Mapping Study on the Definitions of Minimal Viable Product, Euromicro SEAA.

Tripathi, V., Singh, A. P., & Roy, R. (2018). Effect of economic growth initiatives on regional economies: a study in the Indian context. International Journal of Entrepreneurship and Innovation Management, 22(3), 286-297.

O. Paganelli, (1990) Valutazione delle aziende, UTET Università, Torino.

Sorrentino M., (2003), LE nuove imprese. Economia delle nuove imprese imprese imprenditoriali, Cedam, Padova

Spigel, B (2016), 'Resource acquisition and co-production in entrepreneurial ecosystems', Paper presented at Babson College Entrepreneurship Research Conference, Bodo, Norway

Schwartz M. (2008) - Beyond Incubation: An Analysis Of Firm Survival And Exit Dynamics In The Post-Graduation Period. Journal Of Technological Transfer, Vol. 34, pp. 403-421.

Shane S., Venkatraman S. (2000) - The Promise of Entrepreneurship as a Field of Research. The Academy of Management Review, Vol. 25, No. 1 pp. 217-226.

Stayton, J., & Mangematin, V. (2016). Startup time, innovation and organizational emergence: A study of USA-based international technology ventures. Journal of International Entrepreneurship, 14(3), 373-409.

Stayton, J., & Mangematin, V. (2019). Seed accelerators and the speed of new venture creation. The Journal of Technology Transfer, 44(4), 1163-1187.

Vanaelst, Entrepreneurial team development in academic spinouts: An examination of team heterogeneity, Entrepreneurship Theory and Practice, 200

Vallini C. e Simoni C. (2006), Higer Education and Entrepreneurial vocation and capabilities, Firenze University Press.

Van looy B., Landoni P., Van Pottelsbreghe B., Entrepreneurial Effectiveness of European University, Research Policy pp 553

Ventura, R. Quero, M.J. & Díaz-Méndez, M. (2019) The role of institutions in achieving radical innovation, Marketing Intelligence & Planning, July 2019.

Weber M. (1904), L'etica protestante e lo spirito del capitalismo, Sansoni Editori, Firenze

Zaki M., Hussein A. (2019) A Survey on Vertical and Horizontal Scaling Platforms for Big Data Analytics, International Journal of Integrated Engineering 11(6)

Non-academic articles

Associazione Roma Start up.

Bezos J., (2020), Invent and Wander, Harvard Business Review Press.

Boutetiere, H., Reich, A., (2018) Unlocking Success in Digital Transformations. McKinsey Digital

Edinson T., Edinson'statement to an interview from about 1903; reported in Harpers Monthly, September 1932.

(European Commission, 2020).

Genome Report 2020

Graham, P. (2004). *How to make wealth?* Retrieved from Paul Graham - Essays: http://www.paulgraham.com/wealth.html

Edison T.,(1898) Interview to Tomas Edinson "Remark about genius" "The Ladies' Home Journal".

OECD and the Dutch Ministry of Economic Affairs. (2014). *Entrepreneurial ecosystems and growth oriented entrepreneurship*. The Hague, Netherlands: Mason, C., & Brown, R.

Onetti Alberto, (2014) "Scaleups. When does a Startup turn into a Scaleup", Start up Europe Partnership.

Pyne B., (2019), ACA, Angels Capital Association

Ries E. (2011), The lean start up, Rizzoli Etas.

Thiel Peter, (2014) Zero to one: Notes on startups, or how to build the future, Rizzoli Etas.

Priestley D. (2018), 24 Assets: Create a digital, scalable, valuable and fun business that will thrive in a fast changing world, ROI Editors

Start up Valuation Webinar Federico II, 15-04-2021. Giovanni De Caro, a cura di Fabio Greco ed Irene Di Bernardo

Website

www.angelcapitalassociation.it

www.autm.net/

www.economyup.it *Glossario - Start up*

www.Deloitte.it

www.economyup.com

www.ilsole24ore.com

www.johncabot.edu

www.Italiacamp.com

www.lazioiinova.it

www.luiss.it

www.luissenlabs.com

www.mise.it

www.mit.edu

www.nbia.org

www.nzentrepreneur.com

www.paulgraham.com/startupfunding.html

www.picampus.it

www.registrodelleimprese.it

www.romastartup.it

www.spinoffitalia.it

www.theeconomist.com

www.unina.it

www.usnews.com

www.Spin-off Italia.it

www.startupbootcamp.com

www.startupgenome.com

www.startupbusinss.it

www.startupitalia.eu

www.stratford.edu

www.unioncamere.gov.it

www.uniroma1.it

www.whitehouse.gov/economy/business/startup-america