POLITECNICO DI MILANO

School of Industrial and Information Engineering

Master of Science in Management Engineering

How corporates collaborate with university incubators for running new corporate acceleration programmes. Insights from the PoliHub case study

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Academic Year 2016 / 2017

Ai miei genitori

Abstract

In 2005, Paul Graham, a successful entrepreneur, founded Y Combinator in Cambridge, Massachusetts. Researchers and practitioners recognize it as the *first business accelerator*, the first of many founded around the world since 2005. The huge spread of such programmes around the world attracted also the attention of many corporates that began to create internal initiatives also known as *corporate accelerators*. There are different typologies of corporate acceleration programmes and they differs in terms of level of commitment of the corporate. In particular, there are corporate accelerators fully run and managed by the corporate. Furthermore, the call may be opened to external start-ups or just to internal entrepreneurial projects proposed by employees. Finally, there are corporate accelerator programmes powered by private incubators. My thesis focuses on this latter typology of programmes.

Given the newness of such programmes, the literature is still nascent. Therefore, in order to analyse such programmes, I propose a case study analysis of *PoliHub, Start-up District and Incubator*, the incubator of the Politecnico di Milano. More specifically, I analyse three Corporate acceleration initiatives, *BioUpper*, *NextEnergy*, and *Unlock Your Ability*, managed by Polihub on behalf of three multinational firms, respectively Novartis, Terna, and ABB.

In analysing such Corporate Acceleration Programmes, I propose a framework useful for describing the corporate-incubator collaboration. To illustrate this framework, I perform interviews to the key actors from both the corporate and the incubator side. Furthermore, in order to check if start-ups really perceive the value the organizing partners want to offer through the acceleration programme, I also interviewed some start-ups participating to such corporate initiatives.

By proceeding in such a way, I am able to propose a framework useful to understand and set-up a collaboration between a corporate and an incubator aimed at launching and managing corporate acceleration programmes. The framework considers the main strengths and weaknesses of both incubator and corporate involved in the collaboration. Therefore, starting from these main characteristics of the partners, it considers also the potential synergies and challenges that may arise during the collaboration. Finally, the framework considers the main outcomes and objectives of the collaboration.

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Acknowledgments

La tesi, da sempre riconosciuta come l'ultimo ostacolo di un percorso di studi universitario. E come terminare questo percorso senza ricordare e soprattutto ringraziare chi questo lo ha reso possibile grazie al suo supporto?

Per iniziare voglio ringraziare la mia famiglia, tutta al completo dai miei genitori ai miei fratelli, cognati e nipoti. Mi hanno sempre sostenuto in tutti i modi possibili durante questo mio percorso, sono stati sempre presenti senza essere ossessivi, mi hanno sempre spinto a dare il meglio di me senza avere fretta di vedere i risultati, hanno sempre avuto un complimento pronto dopo un esame andato bene e una parola di conforto e carica dopo un esame andato male. Nonostante non sia un tipo molto espansivo e estroverso con loro hanno sempre capito i miei momenti difficili e hanno sempre cercato di essermi d'aiuto. In particolare, voglio ringraziare i miei genitori, i miei esempi e punti di riferimento.
Mio padre, mi ha sempre insegnato il valore dell'impegno e del sacrificio. Mi ha dato l'esempio in prima persona facendomi capire come, per ottenere quello che si vuole e per cercare di costruire un proprio futuro, bisogna accettare di fare i giusti sacrifici perché in un modo o nell'altro saranno ripagati con i risultati. E questo è proprio uno di questi.
Mia madre, ha sempre tifato per me, il suo "bastone della vecchiaia". Mi ha sempre fatto capire come, anche nei peggiori momenti di difficoltà quando tutto sembra andare per il verso sbagliato, bisogna guardare avanti alla ricerca dello spiraglio di luce che indica la fine del tunnel. Sono sicuro che starà gioendo di questo mio risultato e che continuerà a darmi il suo supporto come ha sempre fatto.

Voglio inoltre, dedicare un pensiero e un forte ringraziamento a Nicola, il mio migliore amico, il fratello coetaneo che non ho avuto. Sempre presente nei momenti importanti, belli o brutti che siano stati, sempre pronto a darmi il consiglio giusto, e capace di capire e adattarsi al mio carattere non sempre facile.

Dopo aver ringraziato gli affetti personali, non posso non dedicare il dovuto spazio a chi mi ha guidato durante la scrittura di questa tesi.
In primis, la cara professoressa Cristina Rossi Lamastra che, sin dal primissimo colloquio, si è sempre dimostrata disponibile e pronta ad aiutarmi durante questo mio "ultimo esame". Nei momenti di sconforto, per fortuna pochi, che ci sono stati durante questi mesi, mi ha sempre fatto sentire la sua vicinanza e, soprattutto, è sempre stata pronta ad offrirmi una valida soluzione. Sebbene dopo ogni telefonata o incontro quando la

ringraziavo mi rispondeva che supportare gli studenti è il principale compito di ogni docente, sono certo che lei ha messo sempre qualcosa in più e per questo le sarò sempre riconoscente.

Infine, ultimo ma non per importanza, voglio ringraziare tutta la “famiglia PoliHub” che mi ha permesso di vivere dall’interno ciò che descriverò nelle prossime pagine e soprattutto è sempre stata disponibile a supportarmi nella stesura di questa tesi.

In particolare, voglio ringraziare Stefano e Claudia perché, senza assolutamente conoscermi, hanno deciso di darmi fiducia concedendomi l’opportunità di entrare in PoliHub per poter così partecipare in prima persona ai programmi di accelerazione che presenterò nei prossimi capitoli. Di questo sarò loro sempre grato e spero di poter ripagare la loro fiducia con il mio lavoro. Voglio ringraziare Marco perché è stato il mio primo punto di riferimento in PoliHub e perché, poiché coordinatore di tutte le iniziative di open innovation, mi ha fornito un enorme supporto e importanti spunti per lo sviluppo di questa tesi. Federica, Maria e Serena perché, oltre ad essere diventati insieme a Marco i miei punti di riferimento in PoliHub, sono state sempre pronte e disponibili ad offrirmi un importante “supporto morale” durante i vari momenti di stress e preoccupazione. E per finire, voglio ringraziare Alessandro perché, avendo iniziato il percorso in PoliHub in contemporanea, ha sempre condiviso con me i diversi momenti di gioia, stress e anche preoccupazione ed è sempre riuscito con una sua battuta o con una sua risata a farmi distrarre.

Chapter 1: Introduction

The birth of the accelerator's phenomenon is linked with the foundation of Y Combinator in 2005 in Cambridge, Massachusetts by Paul Graham, a successful entrepreneur. Quickly, it moved and established itself in Silicon Valley. The first run included a cohort of 8 start-ups (Miller and Bound, 2011). Y Combinator is recognized in the literature as the first accelerator and it was an important source of inspiration that led to a strong replication all over the world, especially in Europe.

Indeed, in 2006, just a year later the first accelerator foundation, investors David Cohen and Brad Feld founded TechStars in Boulder, Colorado. It was the first competitor of the Graham's program.

Miller and Bound (2011), in their seminal paper on accelerators, provide a highly cited definition based on their five key features:

- An application process that is open yet highly competitive.
- Provision of pre-seed investment, usually in exchange for equity.
- A focus on small teams instead of individuals.
- Time-limited support, which includes programmed events and intensive mentoring.
- Start-ups supported in cohort batches or 'classes'.

Given the large diffusion of such programmes during the last decade, many researchers focused their analyses on what are the best practices for running such programmes and how effective they are in supporting start-ups during the growth phase.

More importantly, accelerator programmes attracted the attention of many corporates that look at acceleration programmes as an opportunity to foster the internal innovation by collaborating with start-ups. Consequently, as well as traditional accelerator programmes, the number of corporate accelerator programmes have increased steadily in recent years.

There are different typologies of corporate accelerator programmes. For instance, there are corporate accelerators fully run and managed by the corporate. Furthermore, the call may be opened to external start-ups or just to internal entrepreneurial projects proposed by employees. Finally, there are corporate accelerator programmes powered by private incubators. My thesis focuses on this latter typology.

More in details, I analyse the collaboration between the corporate and the incubator running an accelerator programme together.

Since the literature about corporate accelerator programme is still nascent, I perform a case study analysis with particular focus on the corporate accelerator programmes powered by *PoliHub, Start-up District and Incubator*, the incubator of the Politecnico di Milano. More in details, I analyse three different Call for Ideas: BioUpper, NextEnergy and Unlock Your Ability that PoliHub is running respectively for the corporates Novartis, Terna and ABB.
I propose a framework useful for describing and analysing the collaboration between the corporate and the incubator. In order to illustrate this framework, I performed interviews with key actors from both the corporate, the incubator, and the accelerated start-ups.
From a further analysis of the answers provided by interviewed, it emerges that the proposed framework may be useful in order to setup a successful collaboration between a corporate and an incubator running a corporate acceleration programme together.

In the second chapter of the thesis, I provide the state of the art of the literature concerning accelerator programmes. Specifically, I analyse the main trends that fostered the spread of such programmes, the main alternatives to accelerators programmes, i.e. incubator and angel investments, and a comparison between such alternatives and accelerators. Furthermore, I provide a detailed description of corporate accelerator programmes and a set of KPIs useful for measuring both the accelerator and start-ups performances. Finally, I describe the most important building blocks that characterize accelerator programmes: mentoring, peer effect, lean start-up approach.

In the third chapter, I introduce and describe the framework useful for describing and setting up a collaboration between an incubator and a corporate. Furthermore, I also introduce some propositions that I try to illustrate with interviews.

The fourth chapter is fully dedicated to the introduction of *Polihub, Start-up district and Incubator,* the university incubator of the Politecnico di Milano. I provide a detailed description of its portfolio of services for both start-ups and corporates.

In the fifth chapter, I provided the main results arising from the interviews I have performed with the key players from the incubator, the corporate, and the accelerated start-up side.

Finally, the sixth and last chapter of my thesis is dedicated to the description of the most important findings, limitations and the further developments I have identified for this thesis.

Chapter 2: Literature review

2.1 Research methodology

To identify scientific papers to be included in my literature review, I mainly relied on *Scopus.com*[1], a bibliographic database containing abstracts and citations for academic journal articles. It covers nearly 22,000 titles from over 5,000 publishers, of which 20,000 are peer-reviewed journals in the scientific, technical, medical, and social sciences (including arts and humanities). It is owned by Elsevier and is available online by subscription.

More in detail, in order to find scientific articles and papers whose topics are related to accelerators, which are the main theme of this thesis, I searched on the above-mentioned database using the diverse keywords including: *accelerator, start-up, venture, corporate, innovation, investment, mentoring, angel, lean.* I also used the * (wildcard character) in order to include in the research also plurals of each keyword. Specifically, in order to increase the focus of results, I created *queries*, namely couple keywords, and I searched the Scopus database using these queries instead of single keywords. I searched the Scopus.com database using the following queries: *startup* AND accelerator*, start-up* AND accelerator*, venture* AND accelerator*, corporate* AND accelerator*, start-up* AND mentoring, lean AND start-up*, angel AND start-up*, corporate* AND venture**. In so doing, I found 35 papers. Most of these 35 papers (23) are published in high-ranking academic journals like *Journal of corporate finance, Business horizons, Technovation, Academy of entrepreneurship journal, The journal of private equity*. However, some of them are still articles in press that I decided to include after I checked the reliability of the authors thanks to previous publications in international journals.

Although accelerator is a new topic and the literature is still nascent, I decided to improve the research by reading references of previous papers and include in the research also those articles which are relevant for the topic of this thesis, but I did not find by using Scopus. Moreover, due to the novelty of the accelerator phenomenon, I searched for additional papers using different search engines like Google Scholar, ResearchGate and

[1] https://www.scopus.com/home.uri

just in sporadic cases Google. In so doing, I found additional 24 papers including articles published in established journals and working papers as well.
I total, my literature review is based on 59 papers.

Finally, to have a better overview about papers, I created an excel file which includes detailed info about each paper like queries used to identify it, authors, title, relevancy for the scope of this thesis, theme. This file allowed me to have an overview of the collected literature, which proved to be very useful in writing this chapter of my thesis.

2.2 Accelerators: definition and main features

2.2.1 Historical background

The birth of the accelerator's phenomenon is linked with the foundation of Y Combinator in 2005 in Cambridge, Massachusetts by Paul Graham, a successful entrepreneur. Quickly, it moved and established itself in Silicon Valley. The first run included a cohort of 8 start-ups (Miller and Bound, 2011).
Since its inception, Y Combinator has funded over 1000 start-ups, including Loopt, Reddit, Scribd, Dropbox, Heroku, Posterous, Airbnb, and Hipmunk (Miller and Bound, 2011).
Yet, this is not just a Silicon Valley story. Indeed, in 2006, just a year later the first accelerator foundation, investors David Cohen and Brad Feld founded Techstars in Boulder, Colorado. It was the first competitor of the Graham's program.
The success of these organizations in USA led to a strong replication all over the world, especially in Europe. The first cross-boundaries competitor was Seedcamp, an accelerator founded in 2007 by Saul Klein and Reshma Sohoni in London.
Y Combinator is recognized in the literature as the first accelerator and it was an important source of inspiration for similar organizations founded all over the world to date.

Since 2005, the number of accelerator programmes all over the world has increased a lot. There is not a unique platform publishing data about accelerators. More importantly, different sources may report very different numbers. The main explanation of this issue is that each websites reporting information about accelerators have either to hand-collect these data or to let these organizations self-report their data in the platform. Thus, there are many institutions similar to accelerators that define themselves as such even though they are not.

Among all the sources of data available on the web, I decided to consider Seed-DB, a platform founded by Christiansen and used as a point of reference among scholars and researchers involved in analysis of the accelerator phenomenon.
In the current year (2016), Seed-DB reported over 235 accelerator programs world-wide, which have supported approximately 5693 companies[2].

2.2.2 Trends that fostered the raise of accelerators

Before introducing definitions and details of accelerators, I decided to analyse trends, occurred in years before the raise of accelerators, which fostered the birth of huge number of innovative start-ups thus fostering the development of such programmes.
Miller and Bound (2011) considered three main trends:

Shrinking start-up costs: A common belief among actors in this business is the falling cost of hardware and of software development as one of the main drivers in the proliferation of start-ups. This reduction in software and hardware costs was enabled by the evolution of the technology and it is an important factor that fostered the growth of accelerator programmes. For example, we nowadays companies can create instances in a cloud rather than buying a server or activate google apps for their domain rather than buying software licenses. Moreover, the software production costs have shrunk down with the raise of open source software communities, groups of programmers spread around the world that help developer companies either by writing parts of code or simply by providing feedbacks. Finally, for companies that need to get licenses of external software, there is the possibility to pay lower monthly fees rather than large sums up-front.
Summing up, thanks to all these evolutions, the major costs that early-stage ventures need to face are not anymore related to technology. Yet, they are related to people and very often the founders' main problem is how to face living costs, while they are building up their first product, get their first customer or attract their first investment.

Easier to reach new customers: Dave McClure, founder of accelerator programme 500 Start-ups, says that "*the running costs of start-ups are just one part of the story. The more dramatic change is that customer acquisition costs have dramatically fallen and the sophistication of the tools available to target particular customers and measure the effectiveness of different approaches has improved markedly*."

[2] Source: *http://www.seed-db.com* updated to May 2016

As additional evidence of what McClure said, there are the increased spreading of several platforms that allow small companies to access to many potential customers as only large companies did in the past.

Easier routes to revenue: As well as for customers, nowadays there are much better routes to monetisation, particularly through direct payments in the form of transactions, app stores and subscription models. In this way, new ventures can earlier and easier gain revenues with low costs for using these platforms.

Moreover, many experts and researchers link the birth of accelerators with the burst of the dot-com bubble in the early 2000. This event was crucial for IT-ventures because it led to a collapse in valuation of companies thus making investors lose their capital invested without creating any value. Under this conditions, Paul Graham thought a new way for helping new ventures and funded Y accelerator.

2.2.3 Defining accelerators

Despite the current rapid growth of the accelerator's phenomenon, very little researches have been done during the last decade. Several scholars have tried to define what an accelerator is. Currently, many definitions exist, but none of them is recognised as definitive. Some examples:

> *"(1) a late-stage incubation program, assisting entrepreneurial firms that are more mature and ready for external financing; or (2) a facility that houses a modified business incubation program designed for incubator graduates as they ease into the market."* (Lewis et al., 2011)

> *"accelerators […] help ventures define and build their initial products, identify promising customer segments, and secure resources, including capital and employees."* (Cohen, 2013)

> *"A fixed-term, cohort-based program, including mentorship and educational components, that culminates in a public pitch event or demo-day."* (Cohen and Hochberg, 2014)

Yet, Miller and Bound (2011), in their seminal paper on accelerators, provided a definition that is cited in almost every papers and books on the topic. Therefore, I decided to focus attention on it. The definition is the following:

"Accelerator programmes […] *comprise five main features. This is how we define accelerators and how we group them to permit analysis:*

• *An application process that is open yet highly competitive.*

• *Provision of pre-seed investment, usually in exchange for equity.*

• *A focus on small teams not individuals.*

• *Time-limited support comprising programmed events and intensive mentoring.*

• *Start-ups supported in cohort batches or 'classes'."* (Miller and Bound, 2011)

Let us analyse the main features considered by Miller and Bound in their definition.

An application process that is open yet highly competitive. Usually accelerator programmes have web-based application processes through which anybody can apply. The form often focuses on questions designed to reveal as much about both the team behind a start-up and the basic idea they want to develop within the accelerator. After a first cut, selected team are invited to interviews. These are usually short.

Programmes are highly selective, using expert judgement to choose the most promising teams.

Statistically, 1 out of 10 start-ups is selected after the interview. This is also because of the limited number of start-ups that accelerator programmes can support in a single cohort. For instance, Techstars opted for 10 ventures per batch whereas Y Combinator is less constrained and accept up to 60 start-ups per cycle.

Provision of pre-seed investment, usually in exchange for equity. Accelerators programmes usually invest on start-ups selected. The amount of investments varies from programme to programme but usually is based on an assumption about how much it costs per co-founder to live during the period of the programme and for a short period afterwards. Programmes usually provide a minimum of 3.000$ and a maximum of 50.000$ investment during the first three months usually in exchange of equity stake that ranges from 0 to 10%. This can be in the form of convertible note or an equity investment. Therefore, they are not investments for running the start-up yet, are just supports for allowing start-ups' founders to participate full-time in the programme.

A focus on small teams not individuals. Almost all the accelerator programmes do not accept start-ups made by solo-entrepreneurs unless in some exceptional cases. This because, as stated by Y Combinator in the website, *"a start-up is too much work for one person.*[3]" On the other hand, during screening phase, accelerators rarely accept teams larger than four people because the investment needed to cover living costs of founders would be greater.

[3] Source: https://www.ycombinator.com/faq

Time limited support compromising programmed events and intensive mentoring. Usually, accelerators support start-ups for a limited amount of time, between three and six months. This because these programmes have the purpose of creating a pressuring environment that drives rapid progress. During this time frame, team members are involved in direct contact with experienced founders, investors and other relevant professionals.

It is essential for an accelerator to develop an extensive network of high quality mentors. The aim of the mentoring overload is two-fold. On the one hand, mentors can provide honest feedbacks about team actions and on the other hand, founders can establish long-term relationships with mentors that in the future may take on the role of an advisory board over time.

Besides mentors, accelerator programmes also comprise structured events. The most important one is the demo-day, the culmination event in which start-ups meet with investors showing what they developed during the programme. This event gives start-ups the possibility to raise funds from external investors in a way that would be very difficult outside the accelerator.

Start-ups supported in cohort batches or "classes". Accelerator programmes invest in cohorts of companies rather than in single ones.

In their paper, Miller and Bound (2011) use a metaphor to describe this characteristic:

"Taking the raw materials for high growth start-ups, putting them through the same process and mass producing them by finding efficiencies that can be achieved by helping companies all at the same time."

Besides the above-mentioned efficiency for the accelerator, the core advantage coming from this behaviour is the peer support that participating ventures provide each other by working together in the same open space and by participating together to accelerator's activities.

2.2.4 Accelerator structure

To describe the building blocks of accelerators, I decided to use the framework introduced in the literature by Pauwels et al. (2015), which describes carefully the structure of accelerators. Although this framework is used in the work of Clarysse et al. (2015), other authors in their works - like Hoffman and Kelley (2012) and Dempwolf et al. (2014) - agree in considering the building blocks of this model as the most important ones. The framework of Pauwels et al. (2015) consists of 5 building blocks: program package,

strategic focus of the accelerator, selection process, funding structure, and alumni relations.

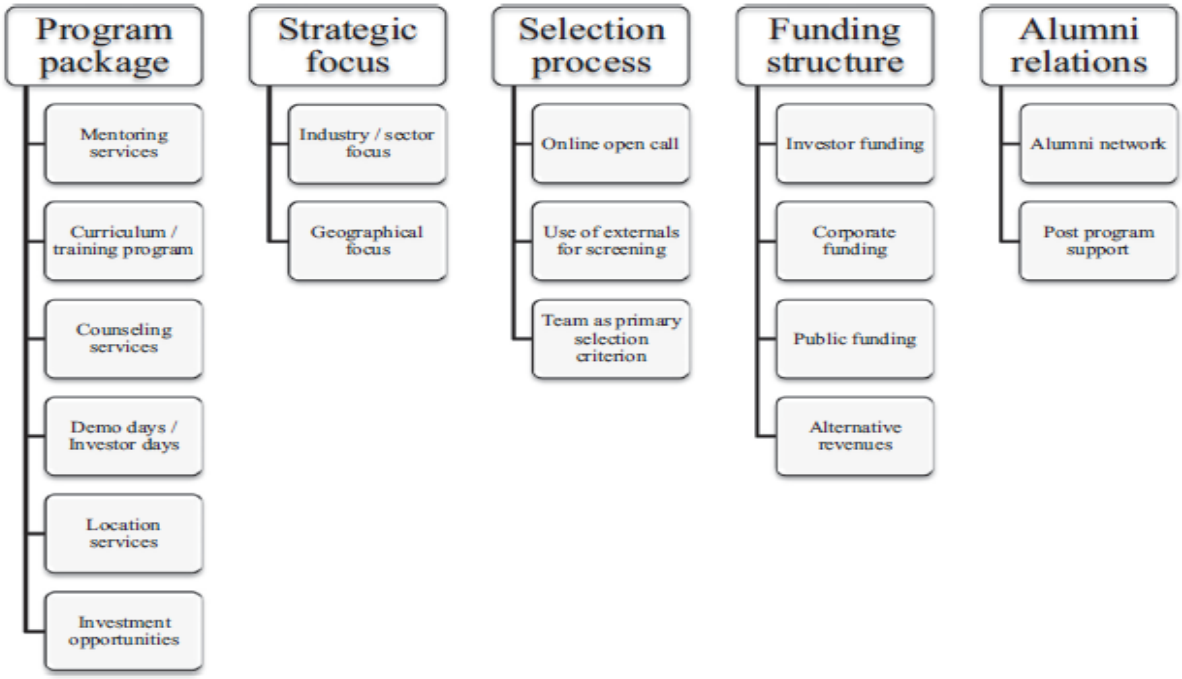


Figure 1. The framework of Pauwels et al. (2015)

Program package: The program package consists of all the services the accelerator offers to its portfolio ventures. The accelerator program package's core services that most differentiate the accelerator from previous generation incubation models are, as above-mentioned, the well elaborated and carefully planned mentoring services. Typically, mentors are experienced entrepreneurs that help ventures to define their business model and to connect with customers and investors. They are heavily vetted before being included into the programme. Although there are variations in how mentors are involved into these programmes, mentoring services are evident across all accelerators also recognised by participating ventures as one of the most important offer. Moreover, accelerator's package most often also includes a curriculum or training program. It consists in lectures and meetings covering different topics such as finance, marketing and management. Participating start-ups have to attend, usually at early stages, these lectures to gain basic knowledge about these topics.

In addition to education and knowledge provided, accelerators offer regular counselling services, provided by the accelerator management team usually in the form of weekly

"office hours" or evaluation moments. In this way, ventures are provided with business assistance and enable monitoring of their progress.

Another important service provided to companies is the possibility to easily create a network with customer and investors through several events created by the accelerator. The most important one, as said before, is the Demo-day during which customer and/or investors are invited to visit the accelerator and attend portfolio companies' presentations. After the presentations, potential investors are invited to meet, formally or informally, with start-ups of their choice, with the hope that business will get done that day, with term sheets signed and investment cheques written. Yet, more commonly, negotiation and investors introduction are made in days/weeks following the Demo-day.

Location services are also part of the accelerator offer. However, they are limited to co-location in a shared open office space with the very effective aim to encourage collaboration and peer-to-peer learning.

Finally, the program package also consists of investment opportunities offered to the portfolio companies. Usually accelerators invest in exchange for an initial equity stake that range from 0 (the case of no funding provided) to 10%. Only occasionally, accelerators provide follow-on fundings. As said before, the aim of investments is to give founders the money support for the whole acceleration time and allow them to put a full-time effort in their start-ups.

Strategic focus. The second building block of an accelerator is the strategic focus. It concerns the choice of accelerators' founders about industry and geographical area covered by the programme. Considering the industry and sector focus, we can distinguish between vertical and specialized focus.

The former is the case of an accelerator that do not address any specific industry, whereas the latter is the case of a programme that is highly specialized in a particular industry such as IT.

Overall, accelerators seem to be focusing their programmes increasingly in certain industries rather than being generic. The most considered are IT, software/app, and high-tech industry in general. This because accelerated ventures have to develop their products before the ending of the programme and in these industries the development process is very quick. Moreover, besides industry focus, accelerators also have a geographical one. They usually choose between being locally versus internationally active.

Selection process. As I described during the definition, accelerators make use of a rigorous, multi-staged selection process. Usually, an open call is organized for a period of time, during which portfolio companies can register and apply online on software platforms. Some example of these platforms are as follows. F6S.com[4] is an on-line platform where founders can apply to start-up programs (including accelerators), pitch investment funds, post or apply for jobsand so on. Fundacity[5] is a Latin American platform launched in 2012, which supports over 100 accelerator programmes serving users in 156 countries with a flexible solution for application creation, management, and cohort selection processes. Angel.co[6] is a platform for start-ups to raise money online, recruit employees, and apply for funding started in Jan 2010 by Babak Nivi and Naval Ravikant, who also wrote Venture Hacks. After the open call, there is a standardized screening process in which portfolio ventures present their ideas and their teams. According to what claimed by many former participants in accelerator programmes, the main selection driver is the team and its members.

Funding structure. A fourth design element characterizing an accelerator concerns its funding structure. The majority of the working capital of many accelerators comes from shareholders. They may be private investors, large companies (as in the case of corporate accelerators, which we discuss in the following), public authorities. In addition, accelerators try to complement these sources of funding with revenues from investments in portfolio companies. Yet, just few of them are able to get substantial revenues from exits/acquisitions/IPOs of ventures they supported.

However, many practitioners believe that is too early for having reliable data about accelerators' payback.

Alumni relations. Another particular element for accelerators concerns its relations with alumni, i.e. companies that participated and graduated from previous cycles. Indeed, many accelerators keep relationships with them and run regular events for alumni by inviting them back into the programme to share their experience to portfolio companies where possible.

The advantages from these relations are not only for accelerated start-ups but also for the accelerator itself because alumni are an important source of mentors and investors, as

[4] https://www.f6s.com/
[5] http://www.fundacity.com/
[6] https://angel.co/

successful graduates are more likely to invest back into the community that supported them in the first place.

2.3 Alternatives to accelerators

Besides accelerators, other actors support start-ups in developing their businesses going through the obstacles of their seed stage. Indeed, accelerators are just the latest born typology of start-ups' supporting actors. The most cited in the literature are incubators and angel investors. For sake of comprehensiveness, in the following, I offer a description of incubators and angel investing alternatives and, more importantly, I compare them with accelerators.

2.3.1 Business incubators

According to the National Business Incubator Association (NBIA) [7], business incubators nurture the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable. These programs provide their client companies with business support services and resources tailored to new firms. The most common goals of incubation programs are creating jobs in a community, enhancing a community's entrepreneurial climate, retaining businesses in a community, building or accelerating growth in a local industry, and diversifying local economies. Ventures participating in incubators are called tenants and usually they pay a fee that strictly depends on the office space rented.

The first pioneering programs are the Stanford Research Park and the Industrial Center of Batavia. The former was founded in California in 1951 by Frederick Terman who saw the Park's potential to serve as a beacon for new, high-quality scientists and faculty, provide jobs for University graduates, and stimulate regional economic development.[8] The latter was founded in 1959 in Batavia (New York) by the Mancuso family that acquired the vacant 850000 square foot complex of multistory building left vacant after the closing of Massey-Ferguson industry, the largest in Batavia. They decided to divide the building and rent to separate businesses that would nurture by providing shared office services, assistance with raising capital and business advice.[9] These two incubators give the start to the raise of such programmes. In the wide literature on incubators, researchers

[7] Source: https://www.inbia.org/resources/business-incubation-faq
[8] Source: http://stanfordresearchpark.com/about
[9] Source: http://www.batavianewyork.com/for-businesses/pages/batavia-industrial-center

identified three waves of incubators characterized by three different typologies that analysed in details are further evolutions of previous programs (Mian et al, 2016; Lewis et al., 2011).

The *first wave* (until 1980) sees incubator programs aimed at economic restructuring and job creation through the providing affordable space and shared services. During the first wave almost 11 business incubators and 20 research parks were founded in United States. During the *second wave* (until 1990), incubators offered a more complete menu of value-adding services including counselling, skills enhancement and networking. This wave was characterized by *mixed incubators*, a mix between science park and technology incubators. Moreover, during these years, there was the raise of University Business Incubators (UBI) that established itself as a best practice and it still is even today.

Finally, during the 1990s, a new incubation model emerged – *the internet based virtual incubation model* that supports new venture growth, especially those start-ups focused in ICT business. The appeal of these for-profit internet-based models grew rapidly. Yet, the April 2000 NASDAQ technology stock crash was detrimental for the growth of this model and represented the main cause of its rapid failure.

According to NBIA website, as of October 2012, there were over 1,250 incubators in the United States, up from only 12 in 1980 and about 7,000 worldwide.[10]

In the very extended literature about incubators, scholars and researchers identified different typologies of incubators based on their focus.

A first and very general distinction could be done between for-profit and non-for-profit incubators.

Beyond this basic dichotomy, another categorization could be done according to different strategic objectives, service offering and competitive focus such as industry sector, type of start-ups, and geographical reach. The results are four different models: *business innovation centres*, with a focus on regional economic development, *university incubators*, mainly with the aim of facilitating technology commercialisation by academic personnel, *research incubators*, mostly focused in research institutes to valorise research output, and *stand-alone incubators,* focused on selecting and supporting high-potential ventures (Pauwels et al., 2015).

[10] Source: https://www.inbia.org/resources/business-incubation-faq

Another categorization is provided in the seminal paper of Colombo and Delmastro (2002). They distinguished 2 different typologies of incubators: *Science Parks (SPs)* and *Business Innovation Centres (BICs).*

Science parks are property-based initiative which (i) has formal operational links with centers of knowledge creation, such as universities and (public and/or private) research centers, (ii) is designed to encourage the formation and growth of innovative (generally science-based) businesses, and

(iii) has a management function which is actively engaged in the transfer of technology and business skills to "customer" organizations. Usually SP are associated with the presence of a business incubator and the localization on site of research laboratories, that may belong to the park, to partner institutions, or to business firms.

The notion of "business innovation center" is linked to the set-up by the EC, through the DG XVI, in 1984 of the European Business Innovation Network, with the aim of supporting innovation and the creation of new firms, especially in depressed European regions.

It is a property-based venture for the establishment and growth of firms, provides customer firms with technical and business services, and is aimed at strengthening the networking capabilities of firms, promoting the establishment of cooperative relations among them and between these and research institutions. Despite BICs seem to be very similar to SPs, there are some differences between these two typologies of incubator. First, BICs are less focused on innovation and science-based activities, with relatively greater attention being devoted to the creation of new firms in low-technology sectors. Second, the linkage with academic and research institutions is generally weaker than in a SP (or even absent).

Regardless the differences and overlaps between incubation models, an incubation model's main components include at least four of the five following services: (1) access to physical resources, (2) office support services, (3) access to capital, (4) process support, and (5) networking services, with a primary focus on overcoming the participating venture's liability of newness and hence improve its survival rate.

In spite of the relatively long history of incubation, there is a conflicting evidence as to whether or not incubation works thus effectively supporting new ventures. On the one hand, there is evidence that incubated firms are associated with higher survival rate and with a greater rate of growth in terms of sales and job creation, than not-incubated ventures. However, on the other hand, there is a contradictory evidence that suggests little

or no effect of incubation on the success of firms (Isabelle, 2013). Some of what incubators provide to entrepreneurs, however, might not be consistent with what the nascent firms actually need. For example, some firms may survive longer in an incubator than they would otherwise. Survival may seem attractive, but if the firm will inevitably fail, then the resources it is consuming might be better used by other, more profitable entrepreneurial ventures. Moreover, if ventures are being shielded from market forces, they might be missing out on important feedback that could enable them to adapt. Early adaptation is critical for early-stage firms before they become more rigid with age, which occurs naturally (Cohen, 2013).

This no clear evidence on the impact of incubators is due to difficulties in measuring the success of these programs related to different selection criteria, lack of data, and diversity of incubators.

2.3.2 Angel investments

An angel investor is a provider of risk capital, i.e. private equity capital (or similar such as loans from investors that also have an equity position in the firm), to small and private firms.

Moreover, the business angel is a wealthy individual, not an intermediary or a private equity limited in partnership. He is neither the principal entrepreneur of the funded company nor a family member. Angels often have entrepreneurial backgrounds and tend to invest in start-ups and other small closely held companies (Prowse, 1998).

However, business angels are just one the external source of capital entrepreneurs can find. Other very common sources are entrepreneur's friends and family, institutional investors such as venture capitalists and banks, trade creditors, and a lot of other entities. In the literature business angels are catalogued as *informal investors*, i.e. *an individual (not an institution) who uses his own money to provide capital to a private business owned and operated by someone else* (Shane and Heights, 2008).

Among angel investors, researchers identified different categories. Below I report the distinction made by Shane and Heights (2008) in their paper:

- **Unaccredited versus accredited investors**: The former are individuals that do not meet the Security and Exchange Commission's accreditation requirements whereas the latter do. Both of them provide their money to private business owned and operated by someone else.

- **Active versus passive investors**: The main difference between active and passive investors lies in the time, besides money, they invest in the development of funded ventures. Active angels invest a lot of time helping ventures in developing their business whereas passive investors do not.
- **Individual angels versus angel groups**: the former act and invest alone whereas the latter are groups of investors that join their money and invest as a group.

In general terms, differences among angels are explained partly by their diverse background and partly by their motivations for investing (most of them are probably investing for return, but some have altruistic reasons).

Since most of them are former entrepreneurs and already founded companies themselves, they prefer to focus on start-ups or early stage firms, rather than already established businesses. As a statistical proof of this behaviour, I decided to report some numbers. In 2014, among the 73,400 companies funded by business angels with over $24 billion, the 39.2% were start-ups/seed stage companies and 40% were early stage company.[11]

Finally, to better understand how angel market works, it is important to understand mechanics of angel investing.

While searching for companies to fund, angels analyse information about potential deals relying on a very primitive and informal networking arrangement of friends, family and other angels and business associated. Certainly, the trustier is the source, the more prone is the angel in investing.

Among the potential investing opportunities, angels screen choosing just the better according to their criteria. The primary criterion that they use to screen proposal is whether the entrepreneur is previously known and trusted. Moreover, angels also require a comprehensive business plan before investing. After analysing the business plan, they usually reject proposals that they judge as limited for growth potential or for an unrealistic pricing of equity.

Following the process, after choosing the proposal, business angels usually negotiate an investment agreement with the firm. Here there are 2 main issues: financial and governance issue. *The first* is related to the type of finance provided and the angel's ownership share. Usually in addition to equity, angels provide follow-on loans. With

[11] Source: http://www.statisticbrain.com/angel-investor-statistics/

regards to ownership, angels rarely decide the share using formal methods. Instead they use a rough method.

The second issue is related to how angels can control the performance of funded ventures. To solve this issue, usually investors use a variety of direct control mechanism to protect their interests. The most important is the representation on the Board of Directors in which they participate and usually have the majority of voting rights. There are also other less important mechanisms that I decided not to mention since angel investors are not the main topic of this thesis.

2.3.3 Comparing accelerators with incubators and angel investors

In her paper, Cohen (2013) performed a well detailed comparison between accelerators, incubators and angel investors. She summed up differences among these 3 supporting programs in the following table:

	Incubators	**Angel Investors**	**Accelerators**
Duration	1 to 5 years	Ongoing	3 months
Cohorts	No	No	Yes
Business Model	Rent; non-profit	Investment	Investment, can also be non-profit
Selection	Non-competitive	Competitive, ongoing	Competitive, cyclical
Venture Stage	Early, or late	Early	Early
Education	Ad hoc, human resources, legal, etc.	None	Seminars
Mentorship	Minimal, tactical	As needed, by investor	Intense, by self and others
Venture location	On site	Off site	On site

Table 1. Key differences between accelerators, incubators and angel investors

These differences are based on eight different drivers: duration, cohorts, business model, selection process, venture stage, education, mentorship and venture location.

I analyse in details the differences among accelerators, incubators and angel investors in the following paragraphs.

2.3.3.1 Accelerators versus incubators

Basically accelerators and incubators differ in four key dimensions, which are reported in the following.

Duration. The limited duration of accelerator programmes, usually from three to six months, is one of the main characteristics of these programmes. On the other hand, researches on incubators suggest that firms graduate from incubators anywhere from one to five years after the incubation starts.

Strict graduation dates reduce the amount of co-dependency between ventures and the accelerators and force the former to face very early and quickly the market selection. Participating in an accelerator programme does not mean creating a successful and able to survive venture. It just speeds up the cycle of the venture leading to quicker growth or failure. On the other hand, incubators' long period programmes are more likely to create co-dependency between tenants and incubator and it may lead to inability or high difficulty of ventures in facing market selection.

Cohorts. Another key characteristic of accelerator programmes is that ventures enter and exit the programme in groups, known as cohorts or batches. Venture founders become very close to the others in their cohort, helping and motivating each other during the programme. The experience of entering the accelerator at the same time, fosters uncommonly strong bonds and communal identity between founders. On the other side, incubators do not provide this kind of experience even though ventures may also develop relationships with other ventures in the incubator.

Business model. Most of the accelerators are privately owned and take an equity stake in the ventures participating in the programs. Moreover, some accelerator managers are themselves active angel investors in accelerated ventures. This is very important because investors objectives are more closely aligned with the ones of venture's funders. In addition to this, very often accelerators are for-profit organizations. Their aim is to help portfolio ventures in growing very quickly in order to get positive exits. In this way, accelerators gain and recover the investments done.

Conversely, incubators are mostly publicly owned. Usually they do not have their own investment funds. For this reason, the objective of an incubator is not perfectly aligned with the ones of tenant firm's founder. In addition, since tenants have to pay a fee for services provided by incubators, the main objective of incubator's managers may be to

keep the venture as long as they can. Therefore, the growth of tenants will be slower than the one of accelerated ventures.

Selection. Another important difference between accelerators and incubators relates to the selection process used to accept/reject ventures into the programme. Since accelerator programmes are made in "batches" of start-ups, the selection is made once or twice a year. On the other side, incubators accept and graduate ventures on an ongoing basis. Moreover, the application for accelerators is open and attracts many ventures from a wide and global pool that, once accepted, have to relocate so they can participate in top programmes. The relocation lasts just few months because of the pre-determined length of the programme. Conversely, due to the high length of an incubation programme, it would be more difficult and costly for a start-up to relocate in order to run the business within the incubator. Therefore, it is less likely for an incubator to attract applications from a wide and global pool.

Education, mentorship and network development. Within incubators programmes, professional service providers including accountants and lawyers usually provide mentorship for a fee. Conversely, intense mentorship and education are milestones for accelerators programmes and very often they are the primary reason that pushes ventures in choosing accelerators rather than other incubators or angels. Accelerated start-ups usually have to participate to educational seminars about a plethora of entrepreneurial topics, which increase their knowledge and limited experience. They are exposed to mentor overload by meeting even five mentors per day for nearly a month. Many former participants stated that mentorship was very helpful because it provided a unique opportunity for ventures to build their social network and learn about novel strategies. Finally, within accelerators an active role is played by managing directors who, as prior entrepreneurs and as serial entrepreneurs, help founders of accelerated start-ups in absorbing and applying the knowledge they are gathering through mentor meetings.

Due to these differences and also to the rapid progresses of accelerators, some incubators decided to merge with accelerators. In her report for Badir website[12], Dinah Adkins explained how these two different programmes can join together. There are five primary reasons for doing this:

- Getting ahead of the competition and remaining relevant

[12] Source: https://badir.com.sa/en/resources/downloads

- Serving more segments of the community (including younger generations and programmers), and expanding the entrepreneurial ecosystem.
- Building deal flow. Seed accelerator programs can generate new incubator clients and serve those who are not ready for business incubation, helping them become stronger, more viable and more focused.
- Increasing opportunities for investment in new ventures and enlarging investor networks.
- Increasing buy-in from stakeholders and partners, and attracting new ones.

Moreover, many experts believe that seed accelerators are risky business models since they are capital intensive. By partnering with incubators, the risk of accelerators is reduced since they would be sheltered by larger incubators, which have the infrastructure and programming capacity to deliver services cost-effectively and efficiently. In addition, incubators may accept ventures graduated from the accelerator that are not ready yet for the market since they grow slowly and need more help.

2.3.3.2 Accelerators versus business angels

Despite the literature often compare accelerators to incubators, they have similarities with angel investors alike. Indeed, they both invest in nascent ventures and as investors have objectives aligned with ventures' founders. However, accelerators solve two issues of angel investors: choose the right ventures to fund and change start-ups courses.
There are three main differences between these two supporting organizations, which I discuss in the following

Duration. The limited duration of accelerator programmes increases the influence on portfolio companies. Moreover, the limited duration of the programmes also helps assemble mentors, guest speakers and other resources for the ventures. Finally, the limited duration forces ventures in graduating at a predefined time, usually "demo day". It is very unlikely, but also evident from numerous interviews made by researchers and published in many papers, for angel investors to assemble a programme similar to accelerators providing such services to such impressive groups of ventures in a such short amount of time. Moreover, it is almost impossible to participate in funded ventures as accelerator managers do. For this reason, usually angel investors decide to enter in accelerator programmes as partners to add some structure around the way they help ventures.

Selection. One of the most difficult aspects of angel investing is selecting the most promising ventures from groups of early-stage companies. Accelerators format and selection process solve this issue and usually, by partnering with angel investors, act like a filter of the huge number of investment opportunities. By speeding up the screening process, accelerators serve as a real option for investors, enabling them to learn about batch of ventures before taking a larger financial stake in them.

Education, mentorship, and colocation. Another challenge for business angels is being able to influence the strategic direction of portfolio companies towards a more promising direction/business. Although they usually negotiate with funded firms in order to get a seat on the board of directors, it is not sure that they will have it. Therefore, without a direct control on ventures, angels are not able to influence funded companies. On the other hand, accelerators, thanks to their structured programme including mentorship, seminars and frequent meetings with accelerator managers, have higher chances to change the direction of portfolio ventures towards better business solutions.

2.4 Different typologies of accelerators

Despite the infant stage of accelerators, nowadays, research highlights different typologies of accelerators identified by using different level of analysis.

By looking at the focus of accelerators, researchers identified a very macro-level difference between *specific and generic* programmes (Hochberg, 2015; Clarysse and Yusubova, 2014).

Besides this macro-level distinction, a deeper analysis is provided by Clarysse et al. (2015) in their paper that identified three different archetypes, *investor-led, matchmaker, and ecosystem archetypes.*

Finally, almost all researchers analysed *corporate accelerator,* another very important accelerator type. Below, I provide a description for each of the above-mentioned typologies.

Generic accelerators. They are programmes that provides services to all kinds of start-ups from low-tech, to no-tech including manufacturing and services. Therefore, their selection process does not consider the industry of portfolio ventures. Moreover, due to potential high variance among industries served, services provided, such as mentoring or education, cannot be too much focused on specific topics that could be completely useless for some accelerated ventures.

Specific accelerator. Specific accelerators focus on specific industrial and technology domains such as digital healthcare, ICT, biotech, bank industry, and many others (Clarysse and Yusubova, 2014). This particular focus requires specific knowledge of how industries work and of the regulations that rule each of them.
Given the specificity of these accelerators, services provided to portfolio companies can be more specific compared to generic accelerators, e.g. specialized mentoring, connections to important investors and customers of that specific industry, and many others.

Regardless the focus of accelerators, usually, they serve start-ups involved in software or service businesses. Indeed, the development of such offerings requires less time and resources. Therefore, it is very likely that such start-ups may finalize their products within the acceleration programme. Yet, last years have seen the emergence of a number of groups focused not on software, but on hardware or other physical products. However, given the higher capital requirements and longer timeline for these types of start-ups, it remains to be seen whether these new accelerator programmes will succeed in these industries as it happened in software and apps over the last decade.

Investor-led archetype. This type of accelerators receives funding from investors such as business angels, venture capital funds or corporates. Their objective is to bridge the equity gap between very early-stage projects and investable business. Hence, the screening criteria in these programmes tend to favour ventures that will take on follow on capital and become attractive investment propositions. These accelerators typically provide some form of seed financing to start-ups in exchange for equity.
Often, these accelerators begin to focus on start-ups that are in the later stages of development. They tend to select ventures which already have some proven track records, and in some cases have already raised pre-seed finance. Investor-led accelerators often choose to specialise within a specific industry thus exploiting all the advantages of specific accelerators.

Matchmaker archetype. This type of accelerator has typically been set up by corporates who want to provide a service to their own customers or stakeholders. These accelerators actively involve their corporate stakeholders in the selection process of their ventures. Hence, they select only those ventures which attract the attention of highly placed individuals in these corporates. Mentors are often selected from within the

corporates, and they play an important role in helping the start-ups find their way through the internal decision-making system of the corporate.
Interestingly, there is often no profit orientation among these accelerators, and they offer no finance to start-ups participating onto the programme. Instead, these accelerators add value by helping the start-ups to connect with potential customers. Their network is therefore almost exclusively oriented towards the potential customer base.

Ecosystem archetype. These accelerators typically have government agencies as main stakeholders. The government agencies are interested in stimulating start-up activity, either within a specific region or within a specific technological domain. For instance, the European Commission stimulates the establishment of accelerators within the major technological programmes, which it finances. The ultimate objective of these programmes is to develop an ecosystem of start-ups within the region or the technology. Hence, selection criteria and processes in these accelerators are organised to attract companies that fit within that vision.
These accelerators typically select ventures in a very early stage in the lifecycle. Often, a value proposition has not yet been developed, and sometimes it is just an individual with an idea. The ecosystem accelerators have the most in-depth developed curriculum among the three archetypes. They typically organise training sessions, workshops and practical learning-oriented events to help the ventures develop their idea and value proposition.

2.5 Corporate accelerators

As abovementioned, another relevant type of accelerator identified in the literature is *corporate accelerator*, company-supported programs of limited duration that help cohorts of start-ups during the new venture process via mentoring, education, and company-specific resources (Kohler, 2016).
They share with traditional accelerator the following characteristics:

- Open application process
- Focus on small and not individual founder's start-ups
- Time-limited support comprising company interactions and mentoring
- Cohorts of start-ups rather than individual companies

Corporate accelerators' aim is to bridge the gap between corporates and new ventures. Indeed, as interface between these two "opposite worlds", these programmes provide a

unique platform for long-term growth and corporate renewal. They are promising way for established companies to explore new ideas for their corporate innovation efforts (Kohler, 2016).

Regardless the huge difference between corporates and start-ups, a collaboration between them could lead to very good results since one has what the other lacks. Indeed, new ventures are innovative, growth-oriented businesses in search of a repeatable, and scalable business model. They are a great source of innovative ideas, talented and passionate founders, and new technology, and they operate using agile and flexible processes (Anthony, 2012). Nonetheless, their liability of newness (Stinchcombe 1965) makes execution difficult, and the whole start-up stage puts a lot of pressure on new ventures thus influencing their performances and final results.

On the other hand, corporates are well designed to execute a repeatable, scalable business model. They have processes optimized for executing in an efficient and effective way. Despite that, they may interfere with search activities required to discover innovation outside the core business, leading to missed opportunities.

As a result of this analysis, both the parties can benefit from collaborating: start-ups receive help to improve execution and corporates receive support to search for innovation. By setting up a formalized corporate accelerator, collaboration may be more efficient and cost-effective. However, while collaborations may lead to benefits for both parties, they are difficult to achieve.

In his recent paper, Kohler (2016) focused on corporate accelerators and identified different results of collaboration between corporates and start-ups. More in detail the author highlights five possible collaborations:

Corporate supports pilot project: Funding the development of innovative solutions and products by start-ups rather than attempting to do so internally gives corporates the opportunity to explore innovation prospects at lower cost, shorter timeframe, and with fewer risks in relation to the core business. A relevant example is the Unilever case. Indeed, they founded in 2014 Unilever Foundry with the aim to formalize all tech-facing projects, and create a "pitch-to-pilot" system for start-ups looking to work with a marketing giant. As stated in the mission, "*we stimulate and facilitate experimentation within our brands and functions across the organisation. Our objective is to build and cultivate strategic partners for the future, with Unilever as a partner of choice.* [13]"

[13] Source: https://foundry.unilever.com/about-us

Corporate becomes start-up customer: Interaction with multiple start-ups during an accelerator program allows corporates to learn about different solutions to their business challenges. Mutual benefits result if the start-up wins the company as a high-profile customer, and the corporate finds a solution for its problem. Working with a large corporate can be an important step for start-ups to test their product-market fit and scale their operations. This is the case of the partnership between Disney and Sphero, a robotics start-ups. The latter, after the graduation from the 3 month-long accelerator programme, partnered with Disney in order to design and create the BB-8 droid, a robot starring in the upcoming film Star Wars: the Force Awakens. The partnership was a win-win: Disney was able to turn a vision into reality with the help of Sphero, while the Boulder, CO-based start-up received an investment of $120,000, as well as a valuable mentor in Disney CEO Bob Iger. [14]

Corporate becomes distribution partner: Channel partnerships can be mutually beneficial because they provide a solution for both the corporate and the start-up. Start-ups can offer their products through the companies' distribution channels, instead of create one itself. A peculiar example is the partnership signed in April 2016 between Roche and the start-up mySugr after an investment of $4.8M made by Roche ventures the previous year[15]. More in details, Roche Diabetes Care and mySugr announced a global partnership that will directly integrate the Bluetooth-enabled Accu-Chek Connect meter with the world's most popular diabetes app, mySugr Logbook (over 600,000 registered users on Apple iOS and Android devices in 51 countries).

Corporate invests in start-up: Backing and supporting start-ups is beneficial for corporates as this provides them with access to new markets and capabilities at lower capital requirement and higher speed compared to internal R&D. At the same time, start-ups benefit from favourable terms relative to traditional sources of venture capital. For instance, General Electric takes an open approach to innovation by crowdsourcing product ideas – both internally and externally. The multinational conglomerate has fundamentally changed the way it does business through collaborating with various other entrepreneurs and companies to drive innovation.[16]

Corporate acquires start-up: Acquiring start-ups is a quick and impactful way to solve specific business problems and enter new markets. Corporate accelerators allow

[14] Source: http://tech.co/big-brands-partnering-with-startups-2015-11
[15] Source: https://mysugr.com/welcome-board-roche-ventures-iseed-ventures/
[16] Source: http://tech.co/big-brands-partnering-with-startups-2015-11

corporates to speed up the scouting process of many start-ups that could be a target for acquisitions. On the other hand, for start-ups, acquisition is an appealing exit strategy. One of the best and very recent example is the acquisition of WhatsApp made by Facebook for $22B in October 2014. With this acquisition, Facebook gained a stronger international audience they could not capture with their Messenger service.[17]

As abovementioned, there are many difficulties in achieving benefits from such collaborations since establishing and managing them requires much effort from both sides.

For this reason, corporates have to choose very carefully the way through which they participate in accelerator activities. At the most basic level, managers from the corporate can join existing private accelerators as mentors or investors. Even though this is not a concrete corporate accelerator, it is a very simple way for achieving the aforementioned benefits. A second model, "Powered by", has corporates contracting with other to run an accelerator for them. In this model, the outside powering organization provides services such as program creation and management, staffing, marketing and back office services. Some instances are accelerators powered by Techstars for very famous corporates. Some examples follow. Disney is the accelerator launched in February 2015 combining the magic of The Walt Disney Company with the mentorship-driven accelerator model of Techstars with the aim to offer a unique advantage for technology start-ups in the media and entertainment space[18]. Barclays is an accelerator run in 4 major cities around the world focused on fin-tech start-ups[19]. Kaplan EdTech is an accelerator started in February 2013 with the aim to help edtech start-ups worldwide to drive change across the entire education spectrum. The inaugural class was a breakout success, raising more than $10 million.[20].

A third model has corporates creating their own internally-run and led accelerators. There are many examples of such accelerators. For instance, Microsoft is running its own accelerators in 7 different cities (Bangalore, Beijing, Berlin, London, Seattle, Shanghai, Tel Aviv) located in seven countries around the world and providing later-stage start-ups with tools, resources, connections, knowledge and expertise they need to become

[17] Source: https://www.bloomberg.com/news/articles/2014-10-28/facebook-s-22-billion-whatsapp-deal-buys-10-million-in-sales
[18] Source : http://www.techstars.com/content/blog/announcing-disney-accelerator-powered-by-techstars/
[19] Source: http://www.barclaysaccelerator.com/#/
[20] Source: http://www.kaplanedtechaccelerator.com.s3-website-us-east-1.amazonaws.com/

successful companies[21]. Another example is the Telefonica's accelerator Wayra, a global accelerator of digital start-ups, present in 10 countries in Latin America and Europe through 11 academies. It facilitates accelerated start-ups, and offers the possibility of being local and global suppliers of Telefonica and its customers.[22]. Finally, there is another peculiar model completely internal and thus not public that is the case of corporates that attempt to accelerate their own internal product teams thus fostering intrapreneurship and spin-offs.

2.6 Comparing corporate accelerators with corporate venture capital

Corporate accelerators are just the most recent strategy that corporates use for collaborating with new ventures. Another common and widely adopted strategy is *corporate venture capital* (CVC). In the following, I describe CVC and I compare CVC to corporate accelerator highlighting similarities and, most importantly, differences.

2.6.1 Corporate venture capital

Corporate venture capital is equity investment by incumbent firms in independent start-ups, i.e., relatively new, not-publicly-traded companies that are seeking capital to continue operation (Dushnitsky and Lenox, 2005). Thanks to these equity investments, incumbents become minority shareholders of funded ventures, thus creating boundary-spanning ties with new ventures. By investing in entrepreneurial firms, incumbents mainly pursue two goals: the financial and the strategic one.

The *financial goal* is to generate a substantial return on investment through the sale of ownership stakes post initial public offerings (IPOs) or eventual acquisitions. Although this is an important goal, empirical evidence shows that, in many cases, this is not the primary motivation for investing.

Indeed, corporates involved in CVC investments usually have a *strategic aim* that is to create a window onto valuable, novel technologies in order to improve their innovative efforts (Dushnitsky and Lenox, 2006). This because, as scholars have widely acknowledged, the knowledge necessary to generate innovations may likely reside outside the boundaries of incumbents and start-ups may be a valuable source for getting it (Maula et al., 2002). In fact, unlike large firms that suffer from inertia and have an

[21] Source: https://www.microsoftaccelerator.com/
[22] Source: http://wayra.co/en

established organization, start-ups have flexible processes, thus are more capable to generate innovation (Kolher, 2016).
Moreover, CVC relationships provide investors with substantial strategic flexibility. Indeed, since investments on start-ups are usually of a smaller amount compared to investments on established companies (e.g. M&A), investors can spread their investments on a portfolio of start-ups, thus reducing the risk in case of failures. In turn, this increases the variety of novel resources to which they have access.

At least three different channels facilitate innovation and learning by corporates, which engage in CVC. First, the due-diligence process offers the corporate a unique opportunity to learn about entrepreneurial intentions even prior to committing capital. Second, after the investment the investor may learn about novel technologies thanks to board seats (or observation rights) as well as utilizing dedicated liaisons. Finally, a failing venture may also constitute a learning experience to the extent that it offers technological insights about market or customer's segments.

On the other side, start-ups can gain in different ways from being the target of a CVC investment by a large corporate. In fact, by collaborating with large established firms, they can use the value added services provided by the corporate, get access to valuable complementary assets, endorsements, and international product markets. There is an empirical evidence that CVC-backed ventures fare better than independent venture capitalist-backed ones (Dushnitsky and Lenox, 2005).
However, start-ups have to decide carefully from which corporate to accept a CVC investment. In fact, they cannot underestimate the *"swimming with sharks dilemma"* (Diestre and Rajagopalan, 2012) and have to consider the right safeguards. In particular, the results of collaborating with a corporate is a CVC relation are better under certain conditions.
Dushnitsky and Lenox (2005) highlight that under a weak intellectual property regime and for corporates with high absorptive capacity, the innovation rate will be greater than firms with low absorptive capacity working in industries characterized by tight appropriability regime. Indeed, with regards of appropriability regime, the weaker it is, the more likely ventures start to spill-over other firms' knowledge since patents are not effective in such regime, i.e. it is very difficult to prevent misappropriation and even in case of knowledge spill-over it is very costly to defend the rights for patents. Moreover, even in such weak environments, the knowledge incumbents can steal from

entrepreneurial firms strictly depends on their absorptive capacity, i.e. a firm's ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). Therefore, the higher this ability, the higher the learning benefits incumbents may achieve collaborating with innovative ventures.

Besides these industry characteristics, Basu et al. (2011), analysed two additional important drivers that foster the outcome of CVC investments: intensity of competition and prior CVC experience. More in detail, they prove that in an industry characterized by intensive competition, corporates are more prone to invest in new and innovative ventures. Indeed, a competitive market is characterized by low returns and it threaten their survival. Innovation is the only way for incumbents to differentiate themselves from competitors thus altering their competitive position and escape the competition (or at least compete more effectively). Therefore, corporate in such industries have strong incentives to invest in innovative start-ups.

However, the incentives for investing do not only depend on industry factors. Yet, they are also strictly connected to the investments history. In fact, Basu et al. (2011) highlight that CVC investors that focus upon diverse industries have higher investments opportunities thanks to their network created during past CVC investments. More precisely, by occupying a central position in the network, they accrue grater information and reputation benefits, which increase their ability to identify and attract venture investments opportunities. For this reason, a past experience focused on diverse industries positively impacts the number of CVC the company enters.

Finally, Maula et at. (2009), considered also another important driver for CVC, i.e. the level of complementarities between companies starting the collaboration. More in detail, they prove that if products and businesses of corporates and start-ups are complementary, the collaboration leads both parties to greater social interaction that consequently results in learning benefits. Instead, collaborations between parties with high level of similarity hamper social interaction thus reducing potential benefits.

2.6.2 Similarities and differences between CVC and corporate accelerators

From the CVC description, it is possible to highlight some characteristics that this investment strategy shares with corporate accelerator programmes. First of all, in both cases there is a collaboration between a large corporate and many entrepreneurial ventures. More precisely, corporates invest on many entrepreneurial firms that, due to their flexible structure, are abler to generate innovation and discover new technologies.

In this way, corporates can get access to innovation at lower costs and risks. Moreover, in both cases start-ups get access to key assets and resources of the corporate and in this way can run their business using already optimized processes (for execution) without incurring in large up-front investments for facilities. As a direct consequence of this collaboration, start-ups may use incumbents as early customers in order to test their product and get very early feedbacks. Furthermore, there is an empirical evidence of greater market evaluations for start-ups backed by large corporates.

However, besides these similarities, there are some very important differences. Starting from the selection of start-ups, it is clear that accelerators may use a more structured selection process that, thanks to collaboration with experts and mentors, is able to screen more effectively and efficiently applicants.

Moreover, a huge difference lays in the process of reaching start-ups. In fact, with regard to CVC investments, it is the corporate that, relying on its network, has to find new promising ventures in the market and propose them the collaboration. For this reason, as Maula et al. (2009) proved, the larger the network of a corporate, the greater the number of CVC investments in which it enters.

Conversely, corporate accelerators, despite the overarching aim of the collaboration is the same, i.e. get access to innovation, have an online and, potentially open call for applications. Therefore, is the venture that is proposing itself to the corporate. This makes it more likely for the corporate to find, among applicants, start-ups that completely satisfy its expectations. A direct consequence of the public call of corporate accelerators is the gain in terms of image. Indeed, such corporates, even though they have selfish aims, are seen as *"companies that, even if large and established, care about new ventures and are prone to help and mentor them during the growing phase"*. Hence, by establishing corporate accelerators, these companies are able to make an *"image washing"*.

Another important difference relates to the investments strategy. In fact, although a corporate involved in CVC investments usually acquires shares from different ventures, the investments as well as the due-diligence necessary to evaluate the investment are done singularly. They make different investments in order to create a venture portfolio thus reducing the risk. Moreover, these investments are not time limited. Conversely, corporate accelerators fund a batch of start-ups at once and follow them throughout the programme that usually is time-limited (as all accelerators from 3 to 6 months). Since

services are provided to the whole batch of ventures, the process is certainly more efficient then the CVC one.

Finally, the last difference refers to the post-investments behaviour of corporates and more precisely the ability of influencing ventures' choices. Indeed, corporate accelerator programmes usually (but not necessary) include the relocation in the accelerator facilities and during the programme ventures are provided with important services such as mentoring, education and direct support for speeding up the growing process. In this way, corporates are able to direct influence ventures' choices and give them the right direction for growing.

Conversely, after CVC investments, corporates have, in the best cases, a seat in the Board of Directors. Although a Board seat is a good position for influencing start-ups, it is possible that ventures, afraid from the sharks' opportunistic behaviour, act defensively disregarding corporate suggestions (Maula et al., 2009).

2.7 Measuring accelerators and start-up performances

Despite the huge growth of accelerator programmes around the world, just few accelerators adopt a structured way for measuring their performances and their actual impact on ventures that went through the programme. Caley and Kula (2013) and Dempwolf et al. (2014) investigate the main challenges and benefits associated with measurement. Regarding the challenges, they are significant for accelerators. Indeed, the lack of adequate resources is one the most important barrier for collecting data more consistently over time. Often, the whole accelerator's staff focuses on supporting cohorts (selecting and helping) and managing external stakeholders. This reduce the available time for collecting data about start-ups. Moreover, it is also challenging to collect data from program alumni after graduation, particularly as an accelerator's portfolio increases in size over time. This also because in many cases start-ups are not obliged to publish data about their performances after they have graduated. Certainly, programmes that take equity on ventures measure the performances of start-ups even after the graduation since they are obliged to report their financial performance to investors. Another issue related to measurement involves the very nature of metrics. Indeed, without common, shared definitions, even straightforward metrics like "jobs" or "revenue" may be interpreted in different ways, thus leading to results not directly comparable. For instance, some accelerators may measure the start-up success by tracking the number of patents filed by ventures whereas for other programmes it is measured considering job creation.

However, all these challenges do not mitigate the value of and need for robust, comparable metrics. A more rigorous, standardized and open approach to data collection and reporting brings several benefits. First, a standard set of metrics supports program benchmarking and evaluation. Many stakeholders can use these data. These include: directors and staff looking to improve their programme; entrepreneurs making the decision to apply to or join an accelerator; sponsors and donors assessing their financial support of accelerators; mentors considering donating their time and expertise; government agencies and policy-makers evaluating the role of accelerators for supporting start-ups and fostering regional economic development. Moreover, data availability likely helps practitioners, policy-makers and academics better understand the process of creating high-growth start-ups. In this way, they can analyse better the process and suggest new optimized models and best-practices.

To date, several authors have focused on metrics and performance indicators and proposed potential scorecards for accelerators. Caley and Kula (2013) propose a detailed scorecard, which measures both accelerator and ventures performances since, as many accelerator directors stated, *"the success of the accelerator is the success of the start-ups"*. Moreover, the vertical axis relates to the complexity of the measure. Specifically, are *aspirational* the metrics that are very difficult to measure due to lack of formal description or lack of data.

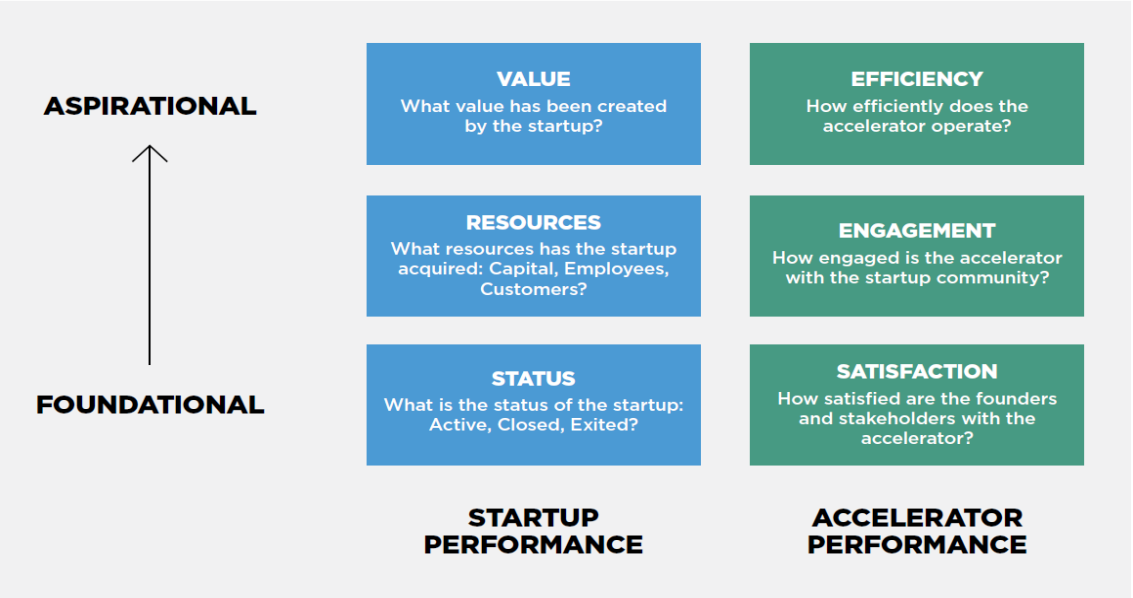


Figure 2. Scorecard for evaluating start-up and accelerator performances

This scorecard it is not intended to comprise an exhaustive list of all metrics to be tracked by accelerator staff. Yet, it includes important metrics that lend themselves to cross-

accelerator comparability. Hence, it is not intended to be used as a start-up's own internal scorecard.

The scorecard's first section focuses on the performance of an *accelerator's start-ups*.

Status: At a foundational level, accelerators should track and publish the status of their start-ups active, closed or exited at regular intervals after graduation. This measure provides a baseline that can be tracked over time. The accelerator can use these data to generate firm survival rates. The one-to-five-year graduate survival rate calculated from a number of accelerator programs could then be compared to those associated with other programs such as incubators, as well as those of unassisted start-ups.

Resources: The second set of metrics captures a start-up's resources including capital, employees and other assets such as patents. This group represents a number of metrics that are regularly tracked today. Some instances are number of jobs created, number of start-ups that have raised follow-on capital, amount raised, patents pending or IP licensed. Customer acquisition could be a measure considered for this category but may need to be approached or measured differently in certain sectors. For some stakeholders, these metrics currently represent the "end result". For example, government-backed programs often consider job creation a key success measure. The growth rate of metrics in this category is useful, as well as the absolute values.

Value: This third category is aspirational in nature, as value is clearly challenging to measure. Quantifying value is difficult for start-ups that have not exited (or have exited but the value of the deal was not disclosed). Therefore, proxies such as revenue or valuation during subsequent investment events must be used. This group of metrics is not intended to measure the value created that is attributable to the accelerator program.

The scorecard's second section contains three groups of measures related to the *accelerator's performance.*

Satisfaction: Measuring satisfaction of the program's participants or recent graduates is a crucial step and helps accelerator directors and staff understand which specific aspects of the program need further improvements. It also can capture many of the non-financial benefits of accelerator programs. Accelerators may also consider using a Net Promoter ScoreTM type of question "*How likely is it that you would recommend this accelerator to a friend or colleague?*" (Caley and Kula, 2013).

Engagement: They indicate the degree to which a start-up community interacts with, participates in, or is visible in their local start-up community. These include: number of applications, community attendance at major events such as Demo Days, alumni participation in the accelerator after graduation, press coverage, social media metrics. Over time, metrics in this category could capture not only the quantity but also the quality of interactions and engagements.

Efficiency: The long-term sustainability of accelerators will be measured not only by the value they help create, but also by the costs associated with doing so. Capturing "costs" such as annual operating budget, volunteer hours, number of staff and using them as the denominator for many of the metrics in other categories could generate new insights into accelerator programs. Cost data could be used, for example, to calculate the cost per job created or the cost per surviving start-up after 12 months. This category of metrics is very important for accelerators near the end of their current two or three year mandates and look to secure re-investment from sponsors and donors.

2.8 Main impacts of accelerators

The rapid growth and diffusion of accelerator programmes around the world caught the attention of researchers that focused their work not only in analysing the main characteristics of accelerators but also in understanding the impact of such programmes both on portfolio ventures and on the productive systems. I illustrate these impacts in the following paragraphs.

2.8.1 Impacts of accelerators on portfolio ventures

Hallen et al. (2015) that focus primarily on the impact of accelerator programmes on portfolio ventures. To provide an answer to the question *"do accelerator accelerate?"* the authors made interviews to participants, program directors and mentors and decided to compare the performance of accelerated ventures and non-accelerated ones. The results of their researches are a good base for understanding whether ventures should apply/participate or not in such programmes.

First, they prove that ventures participating in accelerators have better subsequent performances than similar ventures that have not participated in accelerators. Therefore, although some researchers posit that the time pressure that accelerators impose to portfolio ventures may be detrimental to their future performances (Cohen and Levinthal, 1990; Dierickx and Cool, 1989), the work of Hallen et al. (2015) shows results in favour

of the benefits of accelerators. However, the authors also highlight that the ability of accelerated ventures in achieving key performance milestones faster than non-accelerated ones, strictly depends on the accelerator. In fact, some differences exist among accelerators programmes that reflect on their impact on portfolio ventures. In addition to this, authors also find that accelerators have greater influence on portfolio ventures, as they age.

Moreover, prior experience of participating founders negatively moderates the impact of accelerator programs on firms. Specifically, prior literature suggests that ventures whose founders have greater prior entrepreneurial experience are likely to be more successful than those whose founders have less prior experience due to their understanding of the entrepreneurial process (Chatterji, 2009; Dencker et al., 2009; Eesley and Roberts, 2012; Hsu, 2007). Conversely, the authors highlight that founders with entrepreneurial experience benefit less from accelerator participation.

Coherently with the work of Hallen et al. (2015), Roberts et al. (2015), basing on follow-on surveys, find that accelerated ventures experience a growth in revenues at a rate that is three times the rate of ventures that applied but were not accepted in accelerator programmes.

Finally, Birdsall et al. (2013) investigate the impact of accelerators on the survivorship and on acquisition activity of ventures participating in accelerator programs (14 accelerators located across the United Kingdom, Eastern Europe and Israel). They find that the participation in accelerator programmes increases five year-survivorship by 10% to 15%. Finally, with regards to acquisition activities, authors make a further research comparing companies acquired in each Y Combinator and Techstars Boulder class between 2007 and 2010 with the number of companies that received first round funding from US VCs in the same period. They find that the rate of companies get acquired after completing top tier US programmes is higher than the average rate of US VC backed companies and, coherently with the result of Hallen et al., companies from top tier accelerators are likely to see earlier exits than the average VC backed company.

2.8.2 Impacts of accelerators on the productive system

Fehder and Hochberg (2014) provide an important analysis about the impact of accelerator programmes on the productive system by examining the regional effects of programs on the general equilibrium in the entrepreneurial ecosystem. More in details, they focuse on a particular aspect of the ecosystem: the availability and provision of seed

and early stage venture capital (VC) financing start-ups. The results of their researches confirm that accelerators have regional impact on the entrepreneurial ecosystem. MSAs (Metropolitan Statistical Areas) in which an accelerator is established subsequently exhibit more seed and early stage entrepreneurial financing activity, and this activity appears to not be restricted to accelerated start-ups alone, but spills over to non-accelerated ones. Attracting VCs to accelerator activities (mentorship, demo day) increases the exposure of non-accelerator companies in area to investors. Certainly, this increase in activity may simply represent a shift of investment dollars from other regions into the accelerator's region, possibly to the detriment of the other regions. Even if this is the case, however, if the presence of the accelerator increases activity in local region, this may meet the goals of both the accelerator founders and local policy makers. A second critique is that the companies being funded locally may simply be companies that, due to their high-value, would otherwise have gone to one of the coasts and been financed there, and now are instead financed in their original home regions. However, again, retaining companies locally is often a primary goal for local policy makers and for accelerator founders.

Taken together, these two different perspectives may be important insights for policy makers that have struggled to determine how or if these programmes should be supported or encouraged.

2.9 Most important tools adopted by accelerator programmes for accelerating start-ups

I focus here on the main strategies and most important tools adopted by accelerator programmes to help ventures to grow. Almost each paper about accelerators mentions the following tools: mentoring, peer effect, and the lean start-up approach. These aspects are described in the following paragraphs.

2.9.1 Mentoring

As aforementioned, mentoring is on the most important service provided by accelerators to portfolio ventures that constitutes a commonality among all the accelerator. More precisely, start-ups have the possibility to meet frequently with mentors during the first part of the programme and can discuss with them their ideas thus getting very early feedbacks and suggestions. *Mentors are people with more entrepreneurial experience*

than their protégés and those who serve as reliable friends over a long or fixed period of time. Their role is to empower the entrepreneur, to reflect on their actions and possibly to change future plans (Memon et al., 2014). Mentors usually are external people, former entrepreneurs and founders of many companies that are willing to share their experiences and to help potential entrepreneurs during the start-up process. However, mentoring activities are also provided by accelerator's founders that thanks to their experience in the entrepreneurship field are able to provide important feedbacks and suggestions about strategies useful for early stage ventures.
By doing so, they can provide an education and impact on attitudes of people towards entrepreneurship allowing ventures to make the right choices for making profits.

Comparing different accelerator programmes, it is possible to find some differences in the organization of the mentoring. Indeed, some programmes allow portfolio ventures to meet with several and different mentors in a short period of time without being assigned to just few or one of them. Instead, others programmes assign a group of ventures to a specific mentor that will guide them during the whole programme. However, Cohen (2013) proves that, in the latter case, the impact of mentoring is lower than the first one.

Despite this formal difference, it is possible to identify different roles played by mentors. Memon et al. (2014) identify three different typologies:

i. **Psychological support:** Entrepreneurs need to be mentally strong in order to take risks. Psychosocial support denotes the support of others, having someone to share things with, being accepted by others, having someone they can trust, being trusted, feeling part of a team and making friends. The presence of a mentor considered an 'expert' allows the novice entrepreneurs to improve or build his own mental models by adopting or comparing them with those of his mentor. At the psychological level, it was found that entrepreneurs reported benefits pertaining to motivation, confidence, ending isolation and obtaining feedback.

ii. **Career-related support:** According to the literature about mentoring, career-related functions are most important when it comes to developing learning. Despite these functions were traditionally evident in mentoring within large organisations, different authors also find these functions in entrepreneurial learning and mentoring studies. Career-related support is dynamic and it evolves overtime. There is an empirical evidence showing that career-related and psychosocial mentoring functions are

significantly lower at the initial stages and then increase with the advancement of the process.

iii. **Role-model support:** Mentors usually face problems in maintaining the image of being a wise and ethical role model. Role model support is about the behaviour of protégé in social interactions, what knowledge to share and how to develop a supportive and personal relationship with the protégé. There is a probability that during the course of mentoring relationship, a protégé may get emotionally attached with the mentor. Some researchers state that this support may not have a real effect since the meetings and relationships are arranged by a third party. However, the mutual identification and willingness to become a mentor and protégé contributes to the closeness and intimacy between mentor and protégé.

Certainly, the effect of mentoring on ventures is never the same. It depends on different factors. Memon et al. (2014), make a different level of analysis. At a *surface level* they highlighted the importance of the age, gender, race/ethnicity, and language in moderating the impacts of mentoring.

Besides surface level, there are also *deep level* ones which are experience, competency, trust, attitude, accessibility, network, and shared values.

Much mentoring literature indicates that a protégé's perception of similarity to the mentor and willingness to self-disclose are two prominent factors that are most important for the development of a long-lasting mentoring relationship. Protégés are most likely to form mentoring relationships with mentors they see as being similar to them. An inappropriate match with the dyad due to different values, interests and work style may have a negative impact on mentor and protégé relationships. Therefore, mentors and protégés might share a common ground based on mutual interest and values. Before entering into formal relationship, the mentor and the protégé should become familiar and informally explain their common interests, shared values, future goals and vision.

To close the analysis of mentoring, it is important to have a look at the impacts on start-ups.

The first effect that many interviewed entrepreneurs assess as very important is the access to a very broad social network that they had through mentors they met during the programme. Social networks (also named social capital) are very important since they are a huge source of potential investments. Hence, they are important elements not only over

the short term but especially after the graduation. Therefore, the more ties to investors entrepreneurs possess, the more likely ventures survive over the long term.

A direct consequence of social capital is the access to information about the value of available opportunities. In this way, entrepreneurs are able to identify the right opportunities for their business. In addition to this effect, the overload of opportunities allows founders to develop a tacit knowledge useful to aggregate resources in the new venture. Therefore, as Mejia and Gopal (2015) prove, start-ups that engage in mentorship activities are more likely to release prototypes, to launch new products, and to generate first sales during the accelerator programme.

Moreover, since meetings with mentors usually are concentrated in the first month of the programmes, entrepreneurs do not have time for implementing their ideas. Instead, they spend a lot time in presenting their ideas to mentors getting feedbacks and access to private information to further refine ideas or "pivot" into a similar but related to different areas. Therefore, this process delay the execution at a time in which the uncertainty is lower.

As Cohen (2013) points out, venture founders may experience mentor overload to fall into "failure traps" (Levinthal & March, 1993) when they receive conflicting feedbacks from mentors rather than consistent support. When feedbacks are not time-compressed, ventures experience failure traps: they continuously build new products and iterate until they fail. However, when implementation is delayed and interactions with mentors are time-compressed, ventures experience cognitive overload but do not experience failure traps. Time-compressing failure and search and reducing time to interpret and implement might reduce the "trap" aspect of repetitive failure.

2.9.2 Peer effect

Literature about entrepreneurship gives a lot of importance also to social interactions, e.g. geographical proximity or similarities among ventures that facilitates connections between individuals. Individuals with entrepreneurial social peers are more likely to become entrepreneurs themselves even if the profits are lower and the job alternatives are better (Giannetti and Simonov, 2009). Likewise, university peers with prior founding experience transfer entrepreneurial behaviours, attitudes, and information that reduce the uncertainty of founding a new venture (Kacperczyk, 2013). Social interactions have been found to be particularly salient in entry into an entrepreneurial career. The driver of social interactions is explained in the social learning theory. It suggests that *when an individual*

comes to the realization that another person, similar to the former, can achieve something that is considered challenging, that individual starts believing that the challenge is more achievable than originally thought and, consequently, model his behaviour according to ones of similar individuals (Bandura, 1986).

Moreover, the peer effect literature suggests that entrepreneurship is heavily shaped by colocation and direct peer interaction.

All these fundamental elements that trigger peer effects are included in accelerator's cohorts of ventures. Indeed, by working for the same amount of time, in the same place, and by following the same programme, portfolio ventures can exploit the advantages of peer effect.

Such an effect may impact outcomes through two mechanisms: mentoring and observational learning. Receiving advice or mentoring forces decision-makers to think differently about a problem than they would have otherwise, increases the depths of reasoning, and accelerates the learning process. Considering also the spatial proximity amongst founders, it allows an easy observability of peers thus allowing the flow of information.

Moreover, rather than attempting to imitate firm-level strategies by observing others from a distance, which can lead to incomplete learning, firms in accelerators observed the source of their peer's success, which showed ventures how to achieve similar success. Ventures within a cohort had frequent contact, so they observed "how" other firms achieve success, including failed strategies that they could then avoid. In some cases, ventures simply imitated successful peer strategies. Cohort peers also actively helped ventures close performance gaps (Cohen, 2013).

Indeed, *akin to pacers in a triathlon race, where leaders set the pace for each event, ventures that excelled in different matters set the pace for the cohort* (Cohen, 2013). This analogy fully explains how this effect works: by calibrating against the best firms in their cohort, ventures concurrently downwardly adjusted self-assessments and raised aspirations.

Another reason that explain the positive effect of cohort peers relates to the competition among ventures within a single cohort. In fact, since peers in a cohort are competing for the same resources and attention and thus they occupy substitutable positions, they "locally monitor and affect each other's choices."

However, Smith et al. (2016) highlighte that the size of peers' effects lies in the fit between composition of entrepreneurial team and cohort. Indeed, each cohort may be either diverse or concentrated in prior experience and will influence diverse and concentrated entrepreneurial teams differently. There is the need of having shared language and a shared knowledge in order to communicate effectively. Indeed, although diverse teams in diverse cohorts have access to novel information and diverse perspectives within their team and within their cohort, the weak ties that bind diverse teams do not encourage the transfer of tacit knowledge or in-depth discussion that comes from shared language.

Likewise, despite the fact that concentrated firms in concentrated cohorts are able to share knowledge in a very effective way, they tend to communicate redundant knowledge thus reducing the opportunity to receive new and innovative ideas from a similarly concentrated cohort of peers.

Following this reasoning, the best situation is a trade-off of the two previous situations.

2.9.3 Lean start-up approach

Another important management mechanism used by accelerators is the lean start-up approach.

Lean start-up has been popularized by Eric Ries in 2011 through its final manifestation in the best-selling book "*The lean start-up: how constant innovation creates radically successful businesses"*. In contrast to time-consuming planning, Lean Start-up focuses on constant adjustments and trial-and-error learning in entrepreneurial behaviour. According to Ries, "*Lean Start-up is the application of lean thinking to the process of innovation*". This approach consists in some guidelines. First of all, it is essential to launch prototypes early, even if they are of low quality. It is said, that while the final target group is not yet identified, no claims about the quality can be made. Therefore, probing early manifestations of a product under real circumstances will reduce costs and speed up the process. While talking to people, entrepreneurs recognize that all efforts are welcome by people and feedback is in general positive. Besides money, direct contact to potential clients, introduction to suppliers, and allocation of working hours can all be seen as scarce resources for compensation and will validate if the product or service adds significant value to the customer. Finally, low volume revenue targets help to be realistic and force entrepreneurs to build a business making use of existing cash-flow and focusing only on value-adding product or service features.

The activities from initial idea to a final product can be described by a feedback loop consisting of the phases: building, measuring and learning (Figure 3). Another crucial element is the minimum viable product (MVP). It is a product with the lowest set of features that still delivers value to the customer, but only needs a minimum of effort and time to be developed. A further criterion is that each minimum viable product enables a full cycle through the building-measuring-learning loop.

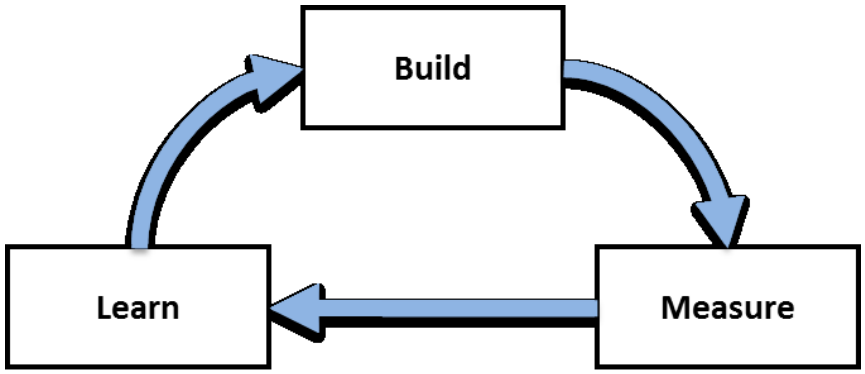


Figure 3. Build-measure-learn loop

Moreover, another important principle of Lean Start-up approach is that each business starts off with a set of assumptions. Two assumptions are very important and should imperatively be tested as soon as possible. On one hand, it is important that the envisioned product or service delivers value to the customer and will also be perceived as such. On the other hand, for a sustainable business it is important that customers will discover the product or service.

In order to make those assumptions about the business model, practitioners recommend a more visual tool like the *Business Model Canvas* by Alex Osterwalder, that helps to identify the riskiest assumptions that need to be first tested. It provides a visual, easy to understand but still holistic overview about the business idea. The canvas contains relevant information about the customer and product, which are interrelated by the value proposition. It also includes financial information and information about the key resources, key activities and key partners that are needed to run the business. Subsequently, business model assumptions, starting from the riskier ones, are proved in experiments using MVPs with clear learning objectives. The question at hand in this phase is if one is able to make progress towards the final vision. In other words, entrepreneurs need to find out if they are able to validate or invalidate the assumptions stated in the business model. Finally, this new knowledge has to be incorporated back into the business idea. Analysis of the data determines whether the present strategy can

be preserved with, or whether a different direction is required. This is referred to as ‘pivoting’. The consequence of a pivot could mean considering different customer groups, focusing on one single function, changing the pricing model or even shifting towards other technologies.

Making use of the build-measure-learn loop, the Lean Start-up concept is especially suitable for situations when neither the problem nor the solution is clear yet. The interplay of customer and agile development methods helps to better understand the users while simultaneously working on prototypes of the solution itself. The customer development process consists of four consecutive phases, namely customer discovery, customer validation, customer creation, and company building. Actually, Lean Start-up is mainly used in the first and second phase with the aim of scientifically providing evidence for a sustainable business opportunity.

Hence, the combination of the customer development process with the iterative cyclic activity sequence of build-measure-learn, helps entrepreneurs to be focused in developing the right things that create the most customer value and are simultaneously are risky in terms of a viable business model.

By following this process, accelerators help founders in developing their business in terms of product and customer. Indeed, having a prototype, a business model, and an initial customer base is very important when looking for investors. This because they are investing in risky ventures. Therefore, they prefer to invest in those with clear ideas, where possible, about the direction of their business. Hence, in front of investors, ventures with prototypes, business models, and an initial customer base, are more attractive than those who do not have any of these elements.

2.10 Why founders launch a new accelerator and why companies participate

The following paragraphs focusing in understanding two different perspectives: the one of the accelerator’s founders and the one of the participants. More in details, I first investigate the underlying reasons and objectives that lead founders to launch a new accelerator programme and I introduce a framework that guides the creation of a new programme. After that, I will introduce the reasons why ventures decide to participate in an accelerator and I highlight also what are the most important drivers when choosing among different accelerators.

2.10.1 The perspective of accelerator's founders: objectives

People start the seed accelerators for a variety of reasons. Paul Graham has written that he and his partners started Y Combinator "*because it seems like such a great hack*." They were excited about an inefficiency in the market for start-ups that they could effect. However, financial returns and helping young entrepreneurs were also attractive reasons for starting the programme. Below, I will introduce and describe the most important motivations highlighted by Christiansen (2009).

Creating an ecosystem. One of the most recent common reasons for starting a seed accelerator programme is to use them in creating an ecosystem. The general notion is that encouraging start-ups in the community will increase the overall number of companies getting started and hopefully long term employment from those companies. For instance, Techstars (Boulder) and Seedcamp (London) aim to use their accelerator programmes as catalysts to build a bigger and better environment for start-ups in those cities, respectively.

Financial return. Rationally, the people starting accelerator programmes are seeking a positive financial return. Traditionally, angel investors seek to achieve a ten-fold return within ten years of their original investment.

High-quality deal flow. For programme founders that enter as angel investors, being involved in an accelerator programme provides them a source of very high-quality deal flow for personal angel investing. They are able to review a number of start-ups ideas and teams in the fields they are interested in and work with the most promising young companies, most of whom have already reached important milestones through the accelerator. Programme founders' early involvement makes it easy for them to continue their involvement with the top companies when those companies are raising additional funds. This is a rarely spoken about but highly valuable result for the founders of an accelerator programme.

Local/regional influence. If the accelerator programme is successful, the founders of that programme can quickly gain local/regional influence. As instance, while Paul Graham was influential through his essays, he is far more influential now that he runs the most high-profile accelerator programme in the world.

Business and community leaders recognize that a programme that helps new companies establish roots in a region is a very valuable good. Consequently, the programme's founders have the potential to build a strong influence in their community. If considering

early-stage start-ups as a community, starting an accelerator programme will make founders more prominent in the world of start-ups.

Start-up excitement without start-up pain. Many accelerators programmes have been started by individuals who truly enjoy start-ups. They often have backgrounds as entrepreneurs or venture capitalists. Accelerators allow them to stay involved with the rewards of a start-up while avoiding the pain of running it.

2.10.2 Framework for creating a new accelerator programme

Given the importance that accelerators are having in these decade, besides the analysis of this kind of programmes, researchers analysed the process that accelerator's founders usually follow when launching an accelerator programme. More in detail, Christiansen in his paper *Copying Y Combinator* report a framework helpful *"for founders to structure any future start-up accelerator programme. It starts with the strengths of the founders and the local environment, and focuses on what would make a new programme distinctive and compelling to entrepreneurs. Once programme founders have clearly identified how their programme will be compelling and what industry or technology it will be focused on, designing the remainder of programme elements is straightforward."* (Christiansen, 2009)
This framework is based on 9 building blocks:

Founders and their backgrounds. The most important element in creating a successful start-up accelerator programme are the programme founders. There simply must be a core person or persons involved that have experience in operating in a start-up company and who have experience as angel or seed investors. Much of the early success of Y Combinator are directly attributed to the reputation of Paul Graham and his partners. Accelerator founders must have a history of operating and investing in their field, but they must also stick close to that field when starting an accelerator programme. This may be quite difficult. What a founder specializes in may be capital-intensive or otherwise difficult to frame as an accelerator. But in order to have the best chance of success, founders must be aware of their own background, strengths and resources.

Programme focus. The choice of programme focus is critical. To date, start-up accelerators have generally focused on funding web applications, just as Y Combinator does. But as discussed above, there is a great capacity for innovation in the vertical focus of a new start-up accelerator programme. Start-up accelerator founders must realistically

survey their local city and region and truly understand its resources and capabilities. A pre-existing network of talents, both in new start-up founders and experienced entrepreneurs, would be incredibly compelling to ventures looking for both funding and advice. When a new accelerator programme is compelling to entrepreneurs because it is in a resource-rich environment, it will attract the best start-ups focusing in that industry or technology.

Distinctive and compelling. The next most important element is a focus on distinction. Founders must create a programme with enough incentives or opportunities that start-ups will prefer it over other programmes. In other words, any new accelerator programme must be distinctive and compelling to entrepreneurs. A recent trend in start-up accelerators has been the founding of what are essentially copies of Y Combinator in other cities or regions. Yet, another start-up accelerator focused on generalist web applications in a city outside of Silicon Valley is frankly not distinctive or compelling. However, assessing where the city already leads and using the local resources (specifically, talent and capital) in that leading industry will set a programme apart from competitors.

Programme goals. The next biggest decision in developing a start-up accelerator programme is the choice of goals. Programme founders need to be very clear in their own goals. If the primary goal is the financial return, then there must be a substantial number of ventures applying and participating in each cohort. If the primary goal to build an ecosystem, the emphasis must be on the educational elements of the programme and its support network. Building an ecosystem may involve funding companies that may not be likely to generate a significant return, but by funding them the ecosystem is made larger and stronger. Naturally, every programme wants to achieve a good financial return and build an ecosystem. But at times these two goals will come into conflict and founders should understand from the start which is truly the more important goal for them.

Funding. Decisions about funding level derive directly from the choice of programme focus and programme goal. It is not based on a formula, but instead it depends on the founders' knowledge of the particular vertical on which the programme is focused. Ideally, the level of funding will be enough to get the start-up to their next milestone. Start-ups in different industries require different levels of funding to reach the next major milestone. The start-ups should be funded at an appropriate level of personal funds for the full term of the programme, commonly what a graduate student might earn as part of

a research fellowship, as well as whatever funds are required to get the business to the next milestone. The full term may likely be longer than three months, particularly when dealing with anything related to hardware, such as electronics, machining or packaging. Finally, the programme should take as low percentage of equity as possible, while still ensuring that the programme has a chance to meet financial success metrics.

Size. Programme founders must also make a conscious decision regarding the number of start-ups in their programme. Fundamentally, the more start-ups that a programme funds, the more opportunities that exist to generate the desired returns. But each venture demands the time and attention of the founders, so care should be taken to ensure that this element is not unnecessarily diminished. Early in the life-cycle of a seed accelerator it is better to limit the size and let the programme founders adjust the programme based on initial feedbacks. Once this formula is successful, the programme can then expand. However, funding just few start-ups may create problems in attracting key figures for the accelerator such us mentors and external investors.

Education programme. There is still significant space for new accelerator programmes to innovate in their education programme. Start-up entrepreneurs may benefit a lot from learning opportunities provided during acceleration programmes. Indeed, start-ups are mentored both on business and on product-specific topics that are applicable to their company,. Accelerators that operate in regions without a strong history of entrepreneurship will need to create a more comprehensive educational programme, while accelerators that focus on more experienced entrepreneurs can likely be successful with a more tailored educational programme. The decision needs to be based on the exact technology or industry vertical on which the accelerator focuses, and on the backgrounds of founders.

Office space / incubation. There are two schools of thought when considering the decision to offer office space or not. Any new programme will need to evaluate the benefits of offering office space, such as rent, internet access, printing, etc. Additionally, new accelerators should evaluate what the opportunities would be when ventures work closely together. This can be both positive, when start-ups easily learn from each other, and negative, when people and activities distract from the task. If the net benefits of start-ups working together outweigh the practical cost, office space should be provided.

Brand. Finally, new seed accelerator programmes need to establish a brand very quickly. The brand is built from what the accelerator does and the success of the

accelerated ventures. If a new programme focuses on recruiting the best start-up founders, best ideas and helping them build the best companies possible, the brand identity will come naturally. A key element of brand that is common amongst current top seed accelerators is providing a service back to their community. This is not just benevolent, as it leads to better quality applicants in the long term.

2.10.3 The perspective of venture's founders: why they participate and how they choice?

Besides the objectives of accelerator's founders, researchers also focused in analysing what are the motivations that drive entrepreneurial ventures in applying into accelerator programmes. To assess these motivations, scholars resort to interview to portfolio ventures already graduated from accelerators. The most important results of these interviews are reported by Miller and Bound (2011), and by Christiansen (2009). The main findings from these interviews are reported in the following.

Funding. The money that accelerator programmes offer is a valuable part of the package and is certainly an attractive feature for people applying for accelerator programmes. However, it was rarely rated as being the most important consideration by the people who had been through accelerators. The amount of funding offered varies from programme to programme. The main advantage of the funding identified by participants is that it allows them to concentrate on their start-ups full-time without having to work on the side and to search for additional founding.

Business and product advice. Accelerators give founders the chance to meet people in the focus industry, both from successful start-ups and in larger businesses and get feedbacks on their products and companies. The quality and relevance of these advices is seen by many founders as being difficult to replicate in such abundance outside accelerator programmes.

Connections to future investment. Accelerators give founders introductions to investors and time face-to-face with them, which can be hard to get for first-time founders outside the accelerator. Because accelerators provide a quality pipeline of new companies, many investors make sure they go along to accelerator events. Getting them all in the same place is something that is a very rare opportunity for new companies. Most accelerators measure themselves on the proportion of their companies that go on to raise further investment.

Validation. Founders that have participated into an accelerator programme identified the fact that once accepted into a programme they have been vetted by a group of successful founders and investors as a major benefit, whether with journalists, investors or potential clients. It helps ventures to be able to say that they have been selected as a 'promising start-up' by an accelerator programme. The value of that validation is linked to how well the programme is regarded.

A peer support. Despite all the meet-ups and hack days it is still hard to meet other founders especially outside major technology centres. But by spending time in the same building or meeting each other regularly over the course of a few months, founders have the possibility to know their accelerator peers to a level where they could provide each other with meaningful support. The alumni network of some programmes is also invaluable to many people who had been through such programmes.

Pressure and discipline. A number of founders interviewed told that one of the things they got out of an accelerator programme was a deadline and basic framework for getting there. Of course every company should be able to provide this themselves, but in reality in the early days it is tricky to do. By applying this pressure, accelerators force founders to stay focused and develop as efficiently as they can their outcomes in order to be ready for the Demo Day.

As I described in the paragraph 2.4, there are different typologies of accelerators. Therefore, founders have to carefully evaluate different programmes and choose the best one for the venture. In particular, there are mainly 5 factors that entrepreneurs should take into account when evaluating the right programme for them (Isabelle, 2013).
First of all, the decision depends on *the stage of the venture*. Indeed, different stage start-ups need different kind of support. Isabelle (2013) highlights that for very-early-stage ventures it is better to go through an incubator instead an accelerator which in turn is more suitable for ventures at more advanced stages.
The second factor is the *fit between the entrepreneur's needs and programme mission, purpose, and industry focus*. In fact, if the venture's focus is aligned with the accelerator one, it is more likely to have higher performances and results during the programme. Conversely, choosing a programme that, for instance, focuses on an industry different from the venture's one is time wasting and it will certainly lead to bad results.
Two further considerations entrepreneurs should take into account are *the selection and graduation policies* and *the nature and extent of services offered.* Hence, in order to

choose the right programme, they have to evaluate the flexibility in how policies are applied and the services offered during the programme. In doing so, entrepreneurs should try to anticipate their needs for employees and try to match their needs with the offering of accelerators. In this way, they do not find themselves in a situation of having to move out at an inopportune time.

Finally, the last, but not less important, element is *the network of partners.* It is a critical component of the services offered by accelerators and are crucial in supporting portfolio ventures along their growth process. Certainly, the larger is the network, the greater are the opportunities for ventures.

Chapter 3. A framework for the collaboration between corporates and incubators

As described in the paragraph 2.5, there are different models available for launching a corporate acceleration programme.

The model I decided to analyse in details in my thesis is based on collaborations between corporates and incubators. This is the case of acceleration programmes powered by firms' external partners. These external partners are usually incubators or private accelerators already running acceleration programmes that provide various services to the corporate. These services include program creation and management, staffing, marketing and back office services.

In this thesis, I present a framework for studying these collaborations. Specifically, I describe their strenghts and weaknesses, which generate synergies but also challenges having thus an impact on various performance dimensions. Figure 4 summarizes the framework.

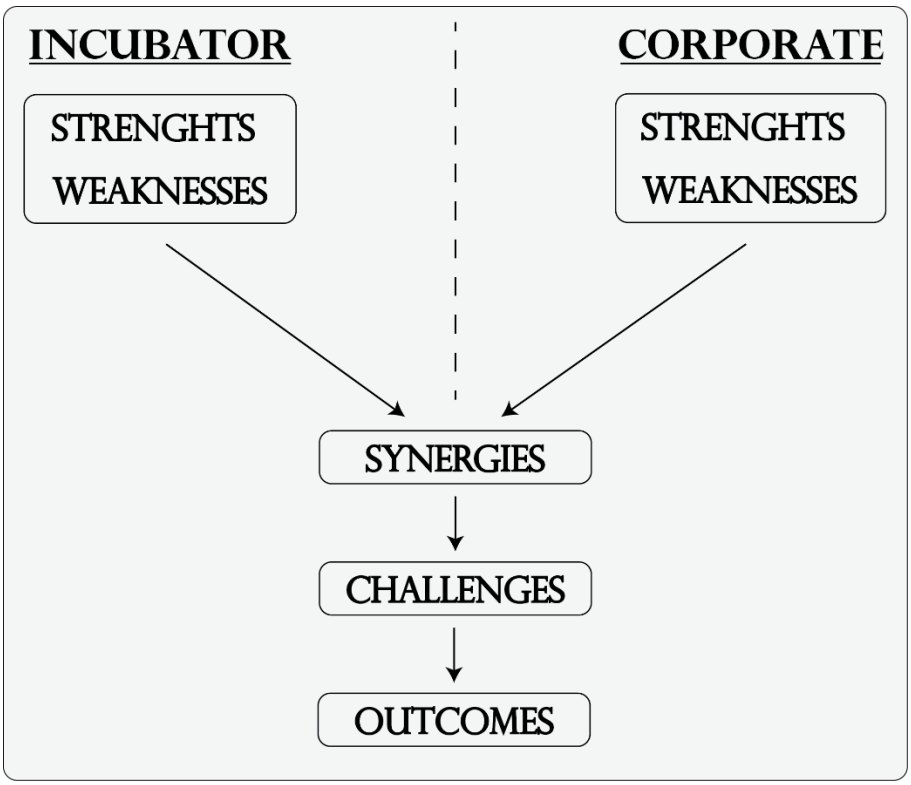


Figure 4. Incubator-Corporate collaboration logical flow

As shown in figure 4, the framework bases on 4 main blocks:

- **Strengths and weaknesses** of both corporates and incubators
- **Synergies** that both parties involved in the collaboration can exploit
- **Challenges** that may reduce the positive impact of synergies
- **Final outcomes** of the collaboration

This chapter will be fully dedicated to the description of the framework. Specifically, the first part of the chapter focuses on the analysis of **strengths and weaknesses**, which characterize both the incubator and the corporate involved in the collaboration. To this end, I group strengths and weaknesses according the three macro-phases of the collaboration, which unfold sequentially: *initiating, nurturing and capturing*. Then, as a direct consequence of the analysis strenghts and weaknesses, I identify the **synergies**, the key elements that the two parties involved in the collaboration can offer to each other in order to pursue the main aim of the collaboration in the most efficient and effective way. Obviously, there are many differences between corporates and incubators. These differences might create **challenges**, which both the parties must face for fully exploiting the potential synergies. I identify and describe these challenges. Finally, I dedicate the last part of this chapter in describing the main **outcomes** of the collaboration, i.e. how start-ups, the corporate, and the incubator may benefit from such collaborations.

After the description of each element of the framework (i.e., strenghts and weaknesses, synergies, challenges, outcomes), I insert tables/figures that summarize the content described in the previous paragraph. In this way, it is easier to visualize the framework and test it in the following chapter that will be fully dedicated in the analysis of the *PoliHub - Startup District & Incubator* case study.

3.1 Strengths and weaknesses of corporates and incubators

As aforementioned, the main aim of this chapter is to create a framework for analysing and illustrating how corporates cooperate with incubators for launching new acceleration programmes “powered by” incubators.
In order to get a deeper understanding of these collaborations, I analyse first the main characteristics of both the parties involved in order to identify their strengths and weaknesses. To this end, I categorise strengths and weaknesses according to three macro-phases of the collaboration:

This is the initial phase of the collaboration, when the selection process of start-ups occurs. In order to be attractive, it is important, for both the entities involved in the collaboration, to build a well-recognized image in the start-up community.	During this phase, the incubator runs the acceleration programme and provides start-ups with the support, mainly mentoring and exposure to investor network, they need. During this phase, the corporate provides its industry expertise and high investment capacity.	Finally, the corporate needs to capture the value created by start-ups during the acceleration programme. However, this phase takes place after the acceleration programme and "outside the collaboration" between the incubator and the corporate. Therefore, it is not analysed in this thesis.

3.1.1 Initiating

Experience in scouting, screening and selecting promising start-ups

The scouting, screening and selection process of the most promising entrepreneurial projects is one of the most important advantages of incubators over corporates when launching an acceleration programme.

Indeed, as analysed by Miller and Bound in their seminal paper (Miller and Bound, 2011), one of the key feature of an acceleration programme is the strict selection process aimed at screening the huge number of applications for each new round of acceleration. Just few applicants (the percentage depends on the accelerator) have the opportunity to enter the programme. Moreover, accelerator programmes often invest considerable time in networking and organizing events to reach potential applicants. The more an incubator runs new programmes, the more the selection process improves in terms of effectiveness and efficiency.

On the corporate side, the screening and selection process cannot be as effective and efficient as the incubator's one. Indeed, as analysed by Kohler in a recent paper (Kohler, 2016), corporates are best designed to execute a repeatable, scalable business model. The processes that firms have optimized for execution might interfere with the search activities required to discover innovations outside the core business, leading to missed opportunities.

Openness of the approach to innovation

Concerning the approach to innovation, there are some differences between corporates and incubators. Innovation may be dangerous in terms of market position, especially for corporates that are leading the market with a particular technology/product. Indeed, a new technology or a new product may establish in the market to the detriment of the existing one.

According to the Schumpeter's theory, the incentives to innovate strictly depends on the difference between the profits a firm earns after having introduced an innovation and the profits in absence of the innovation. More in details, the higher the profits a firm earns after developing an innovation the greater the incentives to innovate. Considering a market structure like a leader-follower market, i.e. a market characterized by a firm (leader) that detains a huge market share, the leader firm does not have any incentives to innovate. Indeed, the leader is already one-step-ahead of the followers and innovation does not add any change in profits. Conversely, the leader risks to incur in market cannibalization, i.e. the new technology/product may impact negatively the performance of the old technology. Therefore, a wrong estimation of the potentialities of the new technology may cause the loss of market leadership in favour of competitors that may close the existing gap in the market.

Leveraging brand identity

During this initial phase, it is important for corporates to be able to attract the start-up community. In doing so, corporates may leverage on a well-recognized brand identity. However, the brand identity is not always an advantage. It is a double-edged sword. Indeed, if a corporate is recognized as close to the start-up community, open to innovation and willing to support start-ups, its brand attracts the community and it has a positive influence on the acceleration programme. Conversely, a corporate that is recognized as far from start-up community or that cooperates with start-ups just for taking their

innovation without caring about the start-ups themselves, may scare start-ups that will avoid collaborations especially at early stages (Dushnitsky and Lenox, 2006).

3.1.2 Nurturing

Ability in creating an ideal habitat for start-ups

Considering incubators running acceleration programmes on behalf of corporates, it is important to underline the ability that they have in creating the perfect habitat for start-ups. Indeed, incubators foster a rapid and controlled growth for start-ups. The latter can fully concentrate on the development of their business model and on the research of new investments relying on the support of the incubators staff. Moreover, as Miller and Bound explain (Miller and Bound, 2011), the presence of other start-ups during the acceleration programme fosters the peer effect that allows start-ups to build their network. It is surely very useful to start-ups since it can be exploited both during the business model validation and during the business model implementation.
In addition to all these features, the incubator also protects start-ups from market pitfalls. Indeed, the high competition level or the presence of a big corporate leading the industry in which the start-up operates or the high costs that characterize the early stage of a new venture may prevent the growth causing an immature failure of start-ups despite they are promising.

Ability in helping the start-ups in scaling their business model

On the other side, also corporates may be helpful for start-ups in the nurturing stage. Indeed, as stated by Kolher (Kolher, 2016), even if large corporates and start-ups are different organizations, one has what the other lacks. Start-ups are innovative, growth-oriented businesses in search of a repeatable, scalable business model. They suffer from liability of newness (Stinchcombe, 1965), which reduces their ability of creating and executing a scalable business model. Conversely, corporates are designed to execute a repeatable, scalable business model. They can provide start-ups with the support needed for improving and executing their business models. In this way, start-ups can add some structure to their organizations that are mostly flexible.

Experience in running acceleration programmes

With respect to the experience in running an acceleration programme, it is easy to understand that incubators have a huge advantage over corporates. Indeed, supporting start-ups either by incubating them for a long period like from one to five years (Colombo

and Delmastro, 2002) or by launching several acceleration programmes is the core activity of incubators. They can exploit the learning curve and take advantage of the experience gained by running similar programmes in the past. This experience can add value during all the phases of an acceleration programme. Indeed, an incubator has advantages over a corporate in terms of not only scouting, screening and selecting the most promising entrepreneurial ideas as previously mentioned. It can also perform better in providing services like mentoring and connections to investors thanks to already established collaborations with their communities. For this reason, relying on incubators for running corporate acceleration programmes is a fast and effective way for corporates that aim at closing the distance from the start-up community.

Value of mentors and investors' networks

As above mentioned, connection to mentors and investors' networks represents a huge value that incubators can add during the acceleration programme. Compared to corporates, it is easier for incubators to access to these networks. Incubators, as centres of excellence, are able to attract former or serial entrepreneurs, investors like VCs and angels seeking for start-ups to fund. Indeed, by collaborating with incubators, mentors and investors have access to the start-up community with the lowest effort. They do not need to scout entrepreneurial ventures on their own (Cohen, 2013). They can funnel all their efforts on supporting start-ups both by performing mentor's activities and by investing in the most promising ideas.

Nevertheless, even if incubators can add value by exploiting mentors and investors network, they lack connections to specific industries.

Value of the specific industry knowledge and network

Corporates can expose start-ups to industry network. More in details, they can provide ties to important players in the specific industry like potential customers, suppliers, intermediaries with whom the corporate already collaborates. By exploiting this network, start-ups may launch new commercial partnerships for developing their businesses. Moreover, corporates can help start-ups in performing a well-crafted market analysis. Indeed, since these firms are usually important actors in the market, they have already conducted market analyses and know very well who are competitors, which similar and/or substitute products are sold in the market, which technologies are being developed, and what are threats and opportunities (in terms of technical innovation) of the industry.

By collaborating with corporates and exploiting their market and industry knowledge, start-ups may benefit by saving a huge amount of resources both in terms of money and time and by speeding up the business development stages.

Exposure to academic knowledge and network

If on one side the corporate may offer connections to potential customers and suppliers exposing start-ups to the industry network, on the other side incubators, especially university incubators, might provide ties with the academic network. Thanks to these connections, start-ups can interact with professors and academic experts that can provide important advices and suggestions on the development of the business model and of the business in general.

Moreover, by exploiting the connection with the university environment, start-ups get a huge exposure to innovations coming from researches done in universities' laboratories. By matching innovations coming from the market with those coming from laboratories, start-ups get to know trends of innovations and more importantly can improve their offerings in order to be aligned to the main trends of innovation.

Level of rigidity in the organizational structure

Incubators and corporates largely differ with respect to the organizational structure. Indeed, in general, corporates have a rigid and complex organizational structure. Usually, a corporate consist in several business units very often operating in different markets with different supply chains. They usually operate in different markets and collaborate with different partners. They could be seen as many different sub-companies under the control of the parent company: the corporate. In order to run such an articulated internal structure, the corporate needs to rely on well-structured business models that have to allow each business unit to operate and scale their businesses in an effective and efficient way (scalability). Furthermore, when launching new products, very often corporates are able to exploit the transferability and repeatability of business models already used and tested in the past by other business units (transferability and repeatability). This ability of building up scalable, transferable and repeatable business models may be helpful for start-ups that very often lack of structure, and need an advisory for building up reliable business models on which basing their development phase.

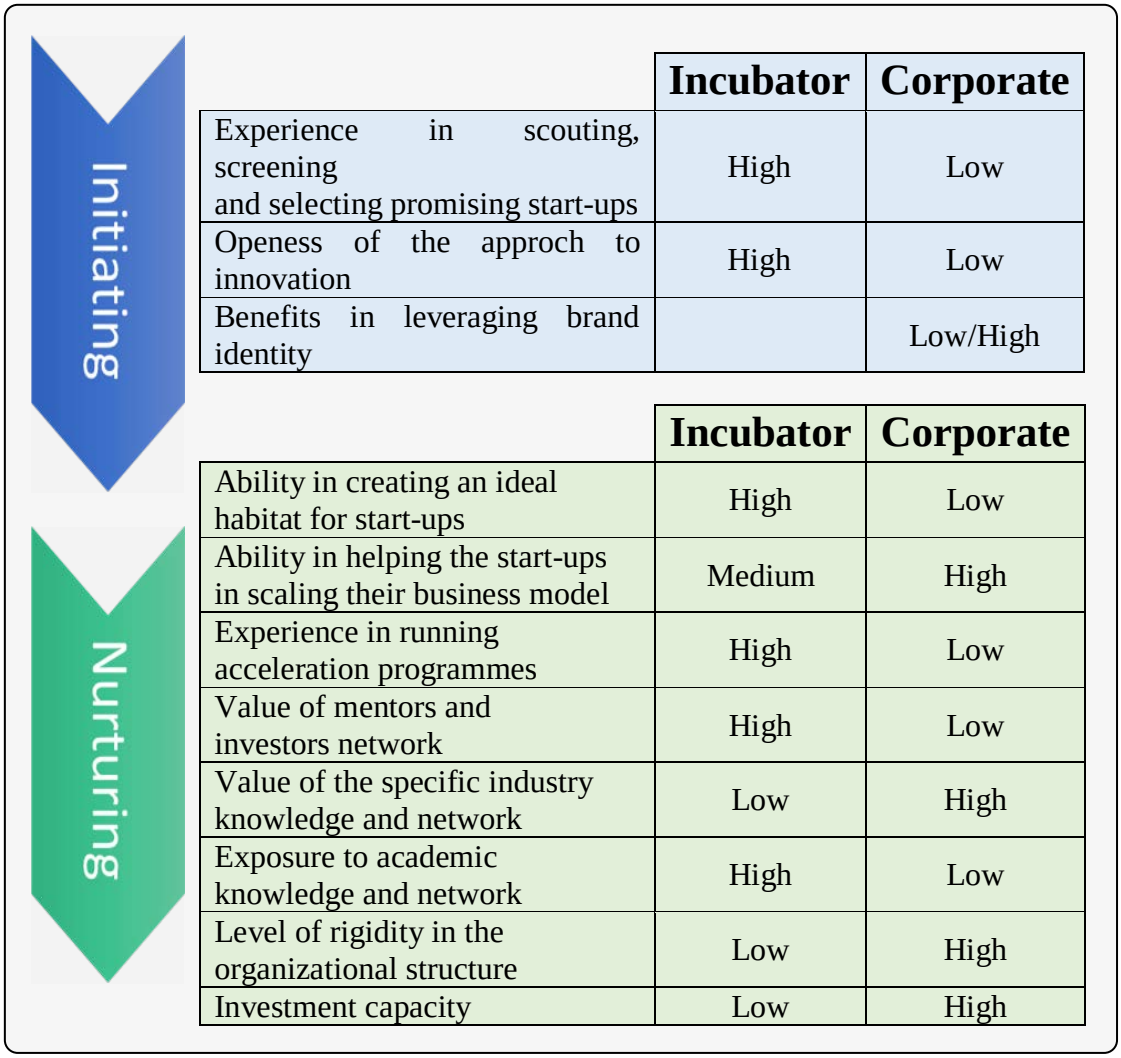
However, an organizational structure like the one above presented has some drawbacks. The presence of many business units operating in different markets and the strict

bureaucracy, that usually characterizes the corporate, make the communication difficult and, consequently, the whole decision process might be long and complex.
This causes a "structural inertia" (Hannan and Freeman, 1984) that slows down the process of developing and introducing innovations. This inertia vary often causes high difficulties when it comes with R&D activities. Indeed, especially for those researches that involve cross-functional teams, it may take too much time, resources and money to coordinate all the functions and to come up with a good result. Nonetheless, very often the research may result in failure thus in huge wastes of time and resources. Therefore, in order to avoid such difficulties and wastes, corporates may prefer to acquire innovative technologies satisfying their needs from external providers instead of developing them inside their laboratories.

Investment capacity

During their early stage, start-ups need a money in order to stay alive during a period characterized of high cash outflows aimed at developing the business, performing market analysis and validation, completing the offer and all the activities that are needed for entering the market. As explained in the previous chapter, there are different sources of external funds. There are private investors like business angels and venture capitalists; there are public funds like those coming for government and institutions; start-ups may get fund from accelerators, although they are aimed at supporting the founders during the acceleration programmes) (Miller and Bound, 2011). Finally, another source of funding is the corporate venture capital (Dushnitsky and Lenox, 2005). Corporates have a high investment capacity and can easily sustain the development of start-ups by investing on them usually in exchange of equity. As descripted in the paragraph 2.6.1, there are different aims that drive a corporate to invest on start-ups like the financial one, i.e., getting a high return on investment after exits or the strategic one, i.e. creating a window onto valuable, novel technologies in order to improve their innovative efforts (Dushnitsky and Lenox, 2005).
Regardless the aim that drives investments, corporates are a good source of money for start-ups and their investment capacity is one of the main advantages over incubators that usually can provide at most a pre-seed fund.

The following table summarizes strenghts and weaknesses of corporates and incubators collaborating for running an acceleration programme.



	Incubator	Corporate
Experience in scouting, screening and selecting promising start-ups	High	Low
Openess of the approch to innovation	High	Low
Benefits in leveraging brand identity		Low/High

	Incubator	Corporate
Ability in creating an ideal habitat for start-ups	High	Low
Ability in helping the start-ups in scaling their business model	Medium	High
Experience in running acceleration programmes	High	Low
Value of mentors and investors network	High	Low
Value of the specific industry knowledge and network	Low	High
Exposure to academic knowledge and network	High	Low
Level of rigidity in the organizational structure	Low	High
Investment capacity	Low	High

Table 2. Strengths and weaknesses of incubators and corporates running an acceleration programme

3.2 Synergies between corporates and incubators

In the previous paragraph, I have analysed the main strengths and weaknesses that characterize an incubator and a corporate involved in a collaboration aimed at creating an acceleration programme.

From a further analysis of these elements, it is possible to deduce potential synergies that can increase the quality of the collaboration leading to better outcomes both for the parties running the programme (incubator and corporate) and for accelerated start-ups. The main aim of this paragraph is to identify and analyse these synergies and more importantly understand what the parties can offer to each other in order to reduce weaknesses and create a win-win collaboration.

First, the ability and strong experience of incubators in scouting, screening and selecting promising start-ups and more in general terms in running acceleration programmes might be very helpful for corporates that lack these competences. Indeed, running acceleration programmes and helping start-ups in developing their business models is the main and core business of incubators. They are created with this specific aim[23]. Therefore, they are fully specialized in supporting start-ups during their early stage. Furthermore, they can exploit learning curves due to many years of experience and many programmes already brought to completion. On the other side, even if corporates lack the ability to scout and select start-ups, they represent surely a point of attraction for those start-ups that are in a more mature stage and are seeking for commercial collaborations or source of investments. As described in the previous paragraph, they can complement incubators, which usually either do not invest directly on start-ups or just provide pre-seed funds, with a huge capital availability ready to invest on open innovation initiatives for helping start-ups with the purpose to integrate them into their businesses. Hence, by joining in a collaboration, the dyad incubator-corporate are surely more attractive than just one of them running an acceleration programme alone. Indeed, they can attract both early stage start-ups needing an acceleration programme in order to develop their business models and mature start-ups needing a "hook" to a potential partner, investor, and acquirer.

Furthermore, the experience cumulated through years of operations allows incubators to create and develop an ideal habitat for start-ups where they can learn and grow without excessive pressures. Within an incubator, start-ups have the possibility to finish researches, to complete the development of the offerings, without being scared of the market threats. However, as aforementioned, start-ups in an incubator may suffer from high inertia that stack them within the incubator barriers without never reaching the market. By collaborating with corporates, the incubator have the possibility to overcome this issue thus facilitating the go-to-market strategy. Indeed, the corporate may open start-ups to its market networks (customer, supplier, distributors, etc.) thus mitigating the stack-in effect.

Finally, among the corporate weaknesses described above, I introduced the high bureaucracy and the high inertia caused by the high structural complexity of the corporate. This makes it highly difficult to collaborate with start-ups that operate in an opposite way. Indeed, they operate basing on highly flexible business models. Furthermore, especially

[23] Source: https://www.inbia.org/resources/business-incubation-faq

during the business model validation phase, start-ups modify (even change completely) their business model in order to adapt them to the market, customer or partners. Such a huge difference among corporates and start-ups may make it impossible or highly difficult a direct collaboration without an intermediary. The incubator ma represent the right actors to intermediate this collaboration. Indeed, on the one hand, it may help start-ups to finalize and add more structure to their business models, and on the other hand, it may help corporates to reduce the impact of the structural inertia thus adding some flexibility to their structure.

The following table summarises potential synergies that can be exploited in the collaboration between incubator and corporate already explained above. More in details, it clarifies what parties can offer to each other in order to complement the other party's lacks and provide together the best service possible to accelerated start-ups.

INCUBATOR → CORPORATE

- Strong experience in running acceleration programme (i.e. scouting, screening and selecting the best entrepreneurial ideas)
- Exposure to academic knowledge and innovation (especially for university incubators)
- Mitigation of the impact of the corporate inertia by adding some flexibility and by intermediating the collaboration with start-ups

CORPORATE → INCUBATOR

- Exposure to specific industries partners and knowledge
- High investment capacity

Table 3. Potential synergies of the collaboration between incubator and corporate

3.3 Challenges of the collaboration

In the previous paragraph, I have analysed the most important potential synergies that may improve the outcomes of the collaboration between an incubator and a corporate aiming at running an acceleration programme.

However, during the collaboration, some challenges may arise hampering the effectiveness of the collaboration and thus reducing the synergies' positive impacts. Therefore, the intensity of the synergis between the two parties strictly depends on how much they are able to overcome challenges.

Although there are many sources of challenges, the most important ones identified in the literature are due to the o*rganizational and institutional distance* between the two parties and their *diverse objectives*. As regards to organizational distance, I move from the seminal paper of paper Boschma (2005), in which the author provides a detailed analysis of proximity between parties involved in a collaboration with specific focus on innovation. In particular, he identifies and describes separately five typologies of proximity: cognitive, organizational, social, institutional and geographical. Furthermore, he analysed the influence that they have on each other and provides some insights about the best conditions, in terms of proximity, that may foster learning within the collaboration.

Following the contents of this paper, I decided to include in this paragraph just the organizational and institutional proximities because they are the main causes of challenge in a collaboration between incubators and corporates.

High organizational distance between the corporate and the incubator

According to the definition provided by Boschma in his paper (Boschma, 2005), "*the organizational proximity refers to the set of interdependencies within as well between organizations connected by a relationship of either economic or financial dependence/interdependence (between member companies of an industrial or financial group, or within a network)"*.

To be precise, this kind of proximity involves the degree of control and more precisely the rate of autonomy that can be exerted in organizational/network arrangements.

In order to 'measure' the organizational proximity, Boschma identifies a continuum that goes from the low organizational proximity or loosely coupled networks (i.e. weak or no ties between autonomous actors/entities, e.g. "on-the-spot market") to the high organizational proximity (i.e. strong ties between autonomous actors/entities, e.g. hierarchically organized firms or networks).

Analysing the effects of this typology of proximity, Boschma states that organizational proximity is believed to be beneficial when it comes to learning and innovation. Indeed, new knowledge creation goes along with uncertainty and opportunism. To reduce these, strong control mechanisms are required in order to ensure ownership rights (IP rights) and sufficient rewards for own investments in new technology.

In principle, a hierarchical organization or tight relationships between organizational units can provide a solution to these problems. Moreover, the transfer of complex knowledge requires strong ties because of the need of feedbacks.

However, too much organizational proximity can also be unfavourable to learning and innovation. Indeed, with regards to specific exchange relations, there is the risk of suffering from the lock-in effect. Asymmetric relations due to different sizes and power of partners in a network may lead to hold-up problems: both parties need to put very high effort on relation-specific investments focused on communication and understanding. Strong ties may limit access to various sources of novel information: innovations very often require a searching for novel information outside the boundaries of the established channels and relations.

Furthermore, according to Boschma, a hierarchical form of governance lacks of feedback mechanisms that are very common among symmetrical relations.

Finally, too much organizational proximity may be detrimental to organizational flexibility needed for implementing innovations.

On the other side, opposing to tight coupled systems, there are relations characterized by too low organizational proximity. The main benefits of such relations are related to the access to various sources of information, that means a broader learning interface. Moreover, it offers flexibility that allows entities to change or modify their goals and strategies in an easy way.

However, if on the one hand, too much organizational proximity may be the main cause of lack of flexibility or lock-in effect, on the other hand, too little proximity may be detrimental in terms of control fostering opportunism behaviours.

In sum, even if the organizational proximity is needed to control uncertainty and opportunism in knowledge creation between organizations, a trade-off between too much and too little organizational proximity has to be considered because of the drawbacks related to each side as above-descripted.

Following Boschma (2005), this trade-off may be represented by the loosely coupled systems that reflect a level of organizational proximity in which both control and flexibility are secured. Indeed, such systems provide open access to various sources of information, meaning a broader learning interface, and they also offer some flexibility.

High institutional distance between the corporate and the incubator

According to Edquist and Johnson (1997), institutions are *"sets of common habits, routines, established practices, rules, or laws that regulate the relations and interactions between individuals and groups"*. Institutions function as a sort of "glue" for collective action because the reduce uncertainty and lower transaction costs. In his paper, Boschma

(2005) makes a distinction between formal (such as laws and rules) and informal institutions (such as cultural norms and habits). Both of them influence the way actors or organizations coordinate their actions. Following this distinction, the notion of institutional proximity includes both the idea of economic actors sharing the same institutional rules of the game, as well as a set of cultural habits and values. (Zukin and Di Maggio, 1990). Sharing a common language, habits, law system for securing IP rigths, etc., provide a basis for economic coordination and interactive learning.

As such, institutional proximity seems to be an enabling factor to learning and coordination.

However, an institutional system may evolve into a situation of lock-in, providing no opportunities for new comers, and institutional inertia, hindering the development of new innovations. Indeed, an institutional system consists of an interdependent set of institution, i.e. the effectiveness of one institution has a positive effect on complementary ones (Hannan and Freeman, 1977). In such complex environment, each system has a structural position, and changes may bring instability by disturbing the position between elements. As a result, either no changes or very little ones are taking place.

Summing up, too much institutional proximity is unfavourable for new ideas and innovations due to institutional lock-in and inertia.

On the other side, too little institutional proximity may be detrimental to collective action and innovation due to weak formal institutions and a lack of social cohesion and common values.

In order to overcome these issues, an effective institutional structure needs to reflect a balance between institutional stability (in order to reduce uncertainty and opportunism), openness (providing opportunities for newcomers) and flexibility (experimenting with new institutions). In order to achieve all of these, Boschma (2005) proposes a system that should fulfil several requirements that guarantee checks and balances.

Different objectives of the two parties

So far, I have analysed the main challenges related to the distance that exists between an incubator and a corporate collaborating in running an acceleration programme. However, these are not the only causes of challenge.

When starting a new collaboration, both the parties have to align their interests and share what are the main goals of the collaboration, i.e. what they want to achieve by working together for a certain period of time.

Nevertheless, collaboration goals are not the only objectives that has to be considered. Indeed, both the parties have individual objectives that want to achieve through the collaboration that usually are not shared with the other party (Li et al., 2008). It is crucial for both the actors approaching the partnership to consider ex ante, before starting the partnership itself, which are the individual objectives of the other party, which are, actually, the reasons why the partner wants to engage in a new collaboration. Furthermore, it is necessary to understand if the goals of both the parties are aligned with each other. Indeed, a misalignment of objectives will certainly lead to a waste of both time and resources because of the failure in achieving the expected results during the collaboration. Considering now the collaboration between an incubator and a corporate for running an acceleration programme, let us analyse which are individual objectives of each party and whether or not they are aligned with each other.

With regards to the incubator, the main objective is focused on the development of the local economic environment (Fehder and Hochberg, 2014). For achieving this goal, they provide a great support to innovative new companies or entrepreneurial projects in order to allow them to face issues related to their start-up stage like getting access to the investors network for funding the development of the project, or developing the business model with the important advice of mentors, former entrepreneurs and experts, etc.
Furthermore, during the incubation phase, start-ups have the chance to grow in a less stressful environment thanks to barriers erected by the incubator with the aim to shield them from market threats at least for the initial stages of the company.

With regards of the other party of the collaboration, the corporate, its main objective is to invest on innovative start-ups for supporting them in the development of new technologies/services. As a direct consequence, both the corporate and innovative start-ups have the chance to engage in new commercial partnerships leading to a win-win situation. Indeed, on the one hand, start-ups have access to funds and resources of the corporate, commercial networks of the corporate (e.g. customers, suppliers, etc.), and they may also benefit from its brand and positioning in the market. On the other hand, corporates have access to new technologies developed by innovative start-ups and, in many case, have the chance to integrate them into their business.

From the analysis of the above-descripted individual objectives emerges clearly a sort of misalignment between the incubator and the corporate individual objectives.

Indeed, although the incubator and the corporate publicly share the same collaboration objectives, i.e. supporting start-ups in developing their businesses, the incubator is more focused on the development of the local economic environment, while the focus of the corporate is more centered on the internal technological innovation.
This misalignment may represent an important challenge that the parties have to face and overcome to collaborate and support effectively start-ups.

The table below summarizes the potential challenges that may arise during the collaboration between a corporate and an incubator thus negatively affecting potential synergies.

• High organizational distance between the corporate and the incubator
• High institutional distance between the corporate and the incubator
• Different objective between the parties

Table 4. Potential challenges of the collaboration between incubator and corporate

3.4 Outcomes of the collaboration

After the analysis made so far about strengths and weaknesses of both the parties, about potential synergies and challenges that may arise during the collaboration, I focus now on the main outcomes of the collaboration.
In doing so, I start from the main objective of the collaboration and then I try to understand which could be the benefits for all the actors involved in the collaboration: incubators, corporates and start-ups.

As often mentioned in the previous paragraphs, the shared objective of the parties involved in the collaboration is to support start-ups in developing their business models in order to offer in the right way valuable and innovative products/services in the right market to the right customer.
By doing so, all actors involved in such a collaboration, i.e. the incubator, the corporate and start-ups, will benefit of the final outcomes.
Let us begin from the analysis of start-ups' benefits. Certainly, as clear in the objective description of such collaborations, start-ups are the focal point, especially the innovative ones. Indeed, all the effort of both incubator and corporate is focused on providing several services aimed at supporting them in defining their business models and offerings. Potentially, at the end of the acceleration programme, start-ups may be operating on the market and collaborating with the corporate in many ways, e.g. commercial or R&D

partnerships. Furthermore, due to the collaboration with the corporate that is characterized by a strong identity and image, start-ups may also benefit in terms of brand identity speeding up the process of brand identification and positioning. Finally, the access to corporate's resources like customer-supplier network allows start-ups to reduce money and time investments for market/customer researches and validations.

Although from an external point of view, the final outcome seems to be beneficial just for start-ups that participate to the acceleration programme managed by the incubator on behalf of the corporate, from a deep analysis it is possible to identify benefits also for the incubator and the corporate.

Considering the incubator, the main benefits emerging from the collaboration with a corporate are related to the development of the local economic and industrial environment and to the return in terms of image. Indeed, the more innovative start-ups operate in the market, the more the intensity of technological innovation and economic development of the local environment. As a direct consequence, the city/country becomes more attractive to the eyes of investors that are more willing to invest on companies operating in the specific area. The increase of investment may also lead to an increase of the number of companies that move from other cities in order to benefit from geographical proximity effect (Boschma, 2005) thus establishing a district of companies. The creation of such environment and network around the incubator has certainly enormous positive influence in terms of economic development of the country where the incubator operates that sees the increase in terms of business activities and establishment of new companies. Furthermore, by becoming the pole of attraction of many important international actors, the incubator have certainly huge returns in terms of image and brand positioning in the international field.

Finally, looking at the corporate side, it can benefit from the collaboration with an incubator since it offers a reliable way for closing the gap with innovative start-ups. Indeed, as often common, corporates, due to their leadership in the market, may represent sharks with whom early stage start-ups might be reluctant to collaborate (Diestre and Rajagopalam, 2012). By collaborating with incubators, which certainly rely on a greater attractiveness to the eyes of innovative start-ups, corporates have the chance to appear less scaring for start-ups and, thanks to investments and support that corporates may provide, it is more likely to start collaborations between corporates and start-ups. Consequently, according also to the corporate's individual objective above-describes,

corporate have access to potential new technologies that may be integrated to the existing ones.

Said that, it is important to stress once again, that the extent of these outcomes for each party involved in the collaboration, highly depends on how much the incubator and the corporate succeed in exploiting synergies and overcoming challenges that may arise during the collaboration, thus providing the best acceleration programme possible to innovative start-ups.

CORPORATE	INCUBATOR
Strengths	Strengths
Weaknesses	Weaknesses
Synergies	
Challenges	
Outcomes	

Table 5. Framework that describes the corporate-incubator collaboration

In the next chapter, using the framework shown in the table 5 as guideline, I will analyse the collaborations that *PoliHub – Startup District and Incubator,* the main focus of the next chapter and the case study I analyse in this thesis, has already established with corporates. The main goal is to discover both their weaknesses and strengths of such collaborations by performing several and targeted interviews to critical actors of both PoliHub and corporates.

Chapter 4. PoliHub – Start-up district and incubator case study

As mentioned previously, I fully dedicate the fourth chapter to the detailed analysis of the *PoliHub – Start-up district and incubator* case. More in details, I personally worked, during a 6 months internship in PoliHub. In particular, I actively collaborate at three of the most important open innovation projects of PoliHub, BioUpper, NextEnergy and Unlock Your Ability. These projects involve PoliHub and three different multinational corporates, respectively Novartis[24], Terna[25] and ABB[26], which I will illustrate in details in chapter 4. While collaborating on these projects, besides carrying on management activities, I performed some interviews to relevant actors from both the incubator and corporate side aimed at providing qualitative evidence on the framework illustrated in the previous chapter and finding some insights for further development described in the final chapter.

4.1 History: PoliHub from a university incubator to an innovation district

PoliHub rises from the previous experience of *Acceleratore d'Impresa,* launched in the year 2000 with the contribution of *Politecnico di Milano* and *Comune di Milano. Comune di Milano* was aiming at fostering the development of the local technological environment by supporting young entrepreneurs. *Politecnico di Milano* felt the need of creating an environment where new technological firms could grow and more importantly turn innovations from idea to products, and bring them from lab to market. Furthermore, aimed also at fostering the technology transfer by supporting innovative ideas and projects in turning from potential ideas to businesses ready to enter the market.

In the year 2007, Politecnico di Milano entrusted the management of Acceleratore d'Impresa to Fondazione Politecnico in order to exploit its network of entrepreneurs, investors, business angels and industrial associations for supporting incubated start-ups during their early stage and becoming a point of attraction for new high-potential firms. From 2007 to 2013, Fondazione Politecnico had great results with the incubator. For this

[24] https://www.novartis.it/
[25] http://www.terna.it/
[26] http://new.abb.com/it

reason, in the year 2013 the management decided to fully mix the environment of the Acceleratore d'Impresa with the one of Politecnico di Milano. In so doing, in 2013, Politecnico di Milano e Fondazione Politecnico[27] invested a great amount of resources in creating new and modern buildings where to establish PoliHub. The main purposes were, on the one hand, to foster the growth of highly innovative start-ups and, on the other hand, to attract more experienced firms. Indeed, by merging these two different worlds, it was possible to create new opportunities and synergies thus developing the local economic and technological environment.

In this way, the management of PoliHub extended the business model adding to the traditional university incubator, focused on scouting and supporting start-ups, also the model of *innovation district* where new entrepreneurial projects, experienced firms, investors and industrial partners can cooperate and exploit potential synergies as shown in the figure below.

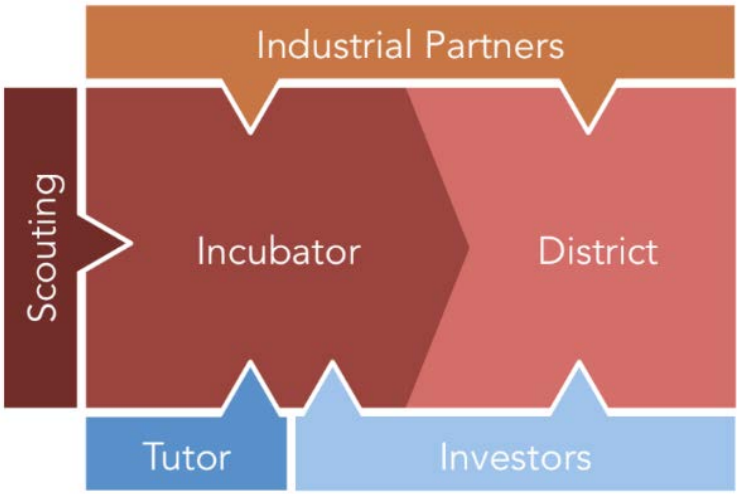


Figure 5. PoliHub, from incubator to innovation district

[27] *Fondazione Politecnico di Milano* was founded in 2003 through a joint effort between the Politecnico di Milano, major city and regional institutions and important corporates to support the university's research projects and contribute to innovating and developing the economic, productive and administrative environment. Fondazione Politecnico is committed to building a more effective relationship between the university, industry and public administrations.
To achieve these goals, Fondazione Politecnico develops: (i) innovation projects not only for large companies, but for numerous small to medium sized enterprises that characterise the Italian economy. (ii) European projects that, by leveraging the Politecnico's renowned capabilities, extend the network of both university and industrial collaborations outside our borders. (iii) These efforts are complemented by a number of training programmes aimed at upgrading professional skills, to keep workers up-to-date with the rapidly evolving labour market, and of digital and online collaboration initiatives. (http://www.fondazionepolitecnico.it/en/)

The main motivations underlying this revolutionary change in the business model of PoliHub are the following:

- Create a **modern and technological-oriented environment** in order to foster the creativity of highly talented people by working close both to new entrepreneurs and to already experienced businesses.
- **Foster the cultural and technological contamination** among people involved in PoliHub activities, either they are researches, students or managers and technicians.
- **Foster the growth and development** of new entrepreneurial firms by even providing low amount of risk capital in order to allow start-ups to prove the feasibility of the idea (i.e. working prototype, customer/market validation).
- **Involve since the beginning firms well established in the market** in order to speed-up the process of potential trade-sale operation on start-ups.

4.2 PoliHub network

After the main change occurred in the 2013, Polihub became a HUB, i.e. a reference point involving all the actors in an innovative ecosystem aimed at fostering the development of the entrepreneurship. In so doing, PoliHub assembled a network of actors both from within and outside the Politecnico di Milano as represented in the following figure.

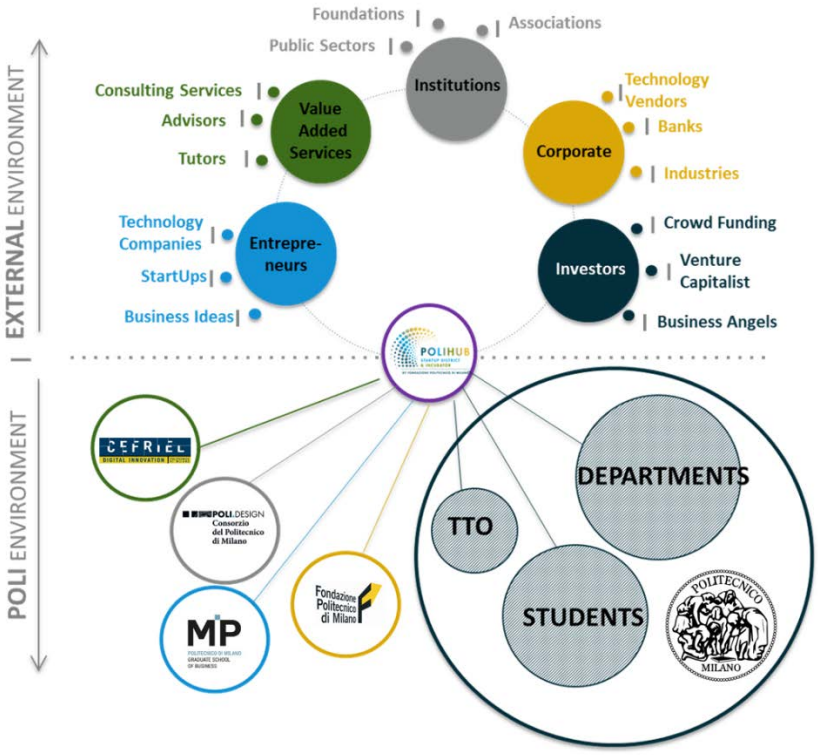


Figure 6. PoliHub network

With regards of the ***Politecnico environment***, Politecnico di Milano represents the focal point of this side of the network. It provides PoliHub with a pool of more than 40.000 students, 1.300 professors, 12 departments, access to specialized laboratories, and thousands of researchers. In addition, the Technological Transfer Office (TTO) plays a key role within the Politecnico di Milano since it allows the enhancement and the development of the university research activities by supporting researchers in turning a simple patent or research in a real business in collaboration with external partners already operating in the market.

Besides the Politecnico di Milano, there are other important actors within the *Politecnico environment*. Indeed, it includes also those consortia providing vertical high-degree education and applied research. By cooperating together with Fondazione Politecnico, they create huge synergies thus providing a great support to innovative entrepreneurship. They are:

Cefriel, a no profit cnsortium with the mission of bridging the gap between the academic and business worlds through a multidisciplinary approach that innovates products, services, and processes with Technology and Design. Cefriel exploits a distinctive operative model and create innovative solutions based on customer requirements. Moreover, they integrate the most recent scientific research results, the best technologies available on the market, the emerging standards, and proper business processes.[28]

MIP, the Politecnico di Milano Business School. With more than 30 years of activities, MIP is one the most prestigious management school for graduated students with different backgrounds interested in playing important roles either within firms or in the public administration. MIP offers a high-degree education by mixing theoretical education programs with innovative research activities focused on entrepreneurship and international economy.[29]

Polidesign, a consortium of the Politecnico di Milano operating in the field of design acting as an interface between universities, companies, and professional organizations and institutions. It develops training programmes for young graduates and professionals, as well as training programmes for companies that are closely focused on innovation. It operates from the perspective of internationalization, establishing partnerships of purpose

[28] Source: http://www.cefriel.com/
[29] Source: http://www.mip.polimi.it/

with universities, schools, bodies, institutions, enterprises, and companies on a case by case basis.[30]

Finally, within the Politecnico environment, also other actors support start-ups by providing vertical expertise, competences, and infrastructures:

Digital innovation observatories of the School of Management of Politecnico di Milano were set up in 1999 to raise cultural awareness in all the principle areas of digital innovation. Today, Observatories provide an expert point of reference for digital innovation in Italy, integrating work in research, education and communication. The purpose is to both produce and spread knowledge about possible opportunities and the impact of digital technology in companies, public authorities and the public.[31]

Polifactory, an interdepartmental research laboratory that explores the relationship between design and new digital manufacturing processes, promoting a new culture of making. A place where to investigate the possible future scenarios of advanced manufactory: from distributed production to open hardware up to high interactivity product-service design. It is a container of services and activities designed to develop youngsters' multidisciplinary talent and their ability to materialize innovative solutions of product-services that integrate design and technology.[32]

PoliFAB, the new micro and nanotechnology facility of the Politecnico di Milano. PoliFAB has a twofold mission: on the one hand supports and boosts the activities of the research groups of Politecnico, on the other acts as an aggregation center for collaborations between the University and industries, providing high-technology means and know-how for industrial applications. The technological capabilities provide a flexible support for proof-of-concepts on materials processes and devices, as well as a fast prototyping of innovative devices in the fields of photonics, microfluidics, micromechanics, spintronics, magneto devices, organic electronics, etc.[33]

The ***external environment*** of PoliHub includes and joins:

Start-ups, entrepreneurs and talents that propose and develop new entrepreneurial projects. In this section, there are all those start-ups that are currently incubated or that already finished their period of incubation (*alumni*) and the spin-offs of the Politecnico

[30] Source: http://www.polidesign.net/
[31] Source: http://www.osservatori.net/
[32] Source: http://www.polifactory.polimi.it/
[33] Source: http://www.polifab.polimi.it/

di Milano. Since its foundation, among the more than 9000 applications, PoliHub selected and supported more than 390 entrepreneurial projects in the start-up phase and the 83 percent of them are still operating in their respective markets.

Investors, i.e. business angels, venture capital funds, and crowdfunding platforms, which support start-ups by providing important sources of financing useful for their growth and development. The most important ones are IAG, IBAN, LVenture Group, United Ventures, CrowdFundMe, and many others. They have signed partnerships with PoliHub that allow them to have access to PoliHub's deal flow of start-ups and, on the other side, they allow PoliHub to offer access to investment opportunities to incubated start-ups (as described in the service offer in the paragraph 4.5). Furthermore, the most important players support start-ups also as mentors.

Corporates which may invest directly on start-ups (*Corporate Venture*), or that are interested in launching new *open innovation* initiatives for scouting innovative start-ups to collaborate with. The most important corporates collaborating with PoliHub are Microsoft, IBM, Mediaset, Terna, Novartis, Roche, ABB, and many others.

Private and public institution like Comune di Milano, Regione Lombardia, Fondazione Vodafone Italia, which collaborate with PoliHub aiming at fostering the economic and social development of the local environment.

Professionals like lawyers, accountants, PR, journalists, which work with PoliHub to provide start-up with ad-hoc services focused in different industry.

4.3 PoliHub in the international ranking and main numbers

PoliHub is among the best university incubators according to the international ranking *UBI Index*, a detailed comparative performance information on the world's top performing university and university associated business incubators (in 2015 expanding to University Business Accelerators). The *Index* is provided by UBI Global, an international research firm based in Stockholm (Sweden), specialized in benchmarking and indexing university business incubation programs, in collaboration with the universities Chalmers and Linkopings.

In 2013, the year of the main change, PoliHub ranked ninth in the European ranking among a sample of 150 university incubators from 22 different countries.

In 2015, 2 years after the main change of the PoliHub business model, Polihub improved its position in the ranking jumping to the second position in the European ranking and to

the fifth position in the World one (among a sample of more than 330 university incubators).

In particular, the most relevant performances, which allowed PoliHub to asses itself among the top-10 worldwide, are the following:

- **Value created for the ecosystem,** i.e. the economic and social influence over the local environment in terms of economic growth and talents development.
- **Value created for clients (start-ups),** i.e. ability to support efficiently and effectively start-ups during their growing stage by providing competences development services, access to diverse sources of financing, access to specific networks.

The figures below show an overview of the most relevant PoliHub performances and the rankings (both European and Worldwide) according to *UBI Index 2015*.

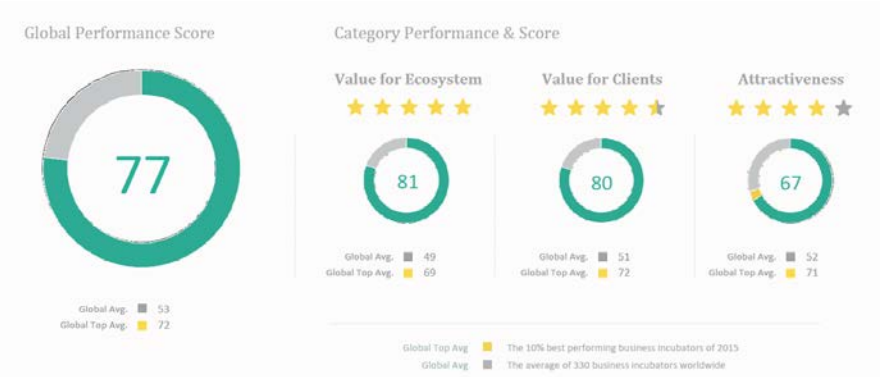


Figure 7. UBI Index 2015 - PoliHub performances

World Top 10 University Business Incubators 2015

#	Incubator	Country
1	SETsqared	United Kingdom
2	Innovation Incubation Center Chaoyang University of Technology	Taiwan
3	The DMZ at Ryerson University	Canada
4	1871	United States
5	PoliHub Startup District & Incubator	Italy
6	Innovate Calgary	Canada
7	INiTS Universitäres Gründerservice Wien	Austria
8	ATP Innovations	Australia
9	YES!Delft	Netherlands
10	Uppsala Innovation Centre	Sweden

European Top 10 University Business Incubators 2015

#	Incubator	Country
1	SETsqared	United Kingdom
2	PoliHub Startup District & Incubator	Italy
3	INiTS Universitäres Gründerservice Wien	Austria
4	YES!Delft	Netherlands
5	Uppsala Innovation Centre	Sweden
6	UtrechInc	Netherlands
7	Business-Incubator of National Research University Higher School of Economics	Russia
8	ITU SEED (ITU CEKIRDEK)	Turkey
9	BLC3 Incubadora	Portugal
10	Parque Tecnologico de la Salud de Granada (PTS Granada)	Spain

Figure 8. UBI Index 2015 - Rankings

With regards to the performances of PoliHub since its foundation, the figure below summarizes the most relevant one that allowed PoliHub to become the second best university incubator according to the UBI Index.

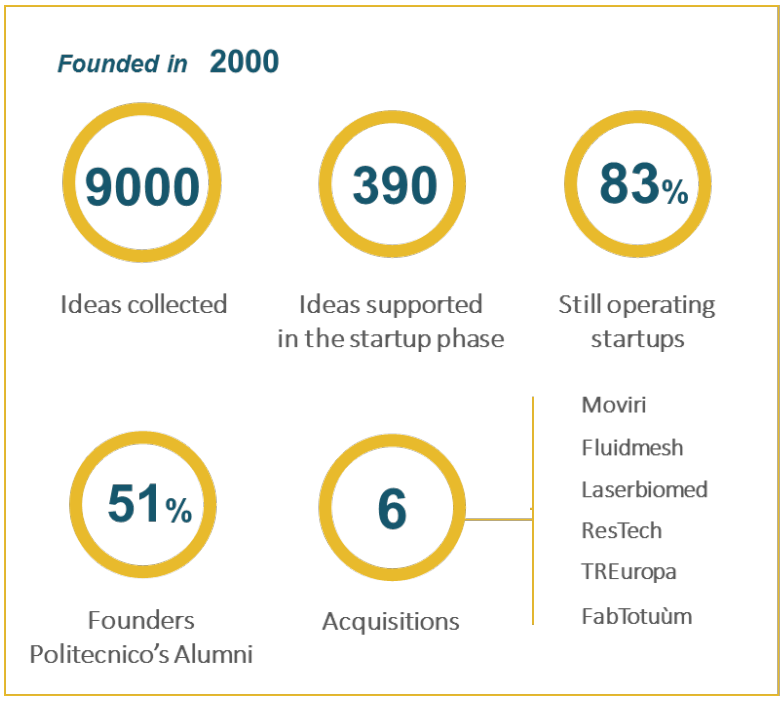


Figure 9. PoliHub performances since 2000

More importantly, PoliHub, since its foundation, collected and valued more than 9000 ideas/entrepreneurial projects, 1000 just in the 2016. Moreover, PoliHub supported 390 entrepreneurial projects in the start-up phase and the 83 percent of them are still operating in their respective markets. Among the general KPIs, it is important to underline that since 2000, 6 start-ups have successfully completed the exit, i.e. they have been acquired by important players in their respective industries. The last acquisition in the history of PoliHub happened in May 2016 when Zucchetti Group, an Italian company leader in the production of software, hardware and services for companies, acquired the 51% of FabTotum, a start-up that produce and commercialize desk 3d printers, for 1.5M€.
With regards to the numbers of the last year (2016), PoliHub hosted more than 50 start-ups and more than 20 firm of the district. Besides them, in the 2016 PoliHub supported more than 35 start-ups through the acceleration program. Finally, a relevant KPI relates to investments raised in the 2016. Indeed, start-ups were able to raise more than 17 M€.

4.4 How to join PoliHub

There are mainly three ways for entering in the PoliHub community: online application form, Switch2Product (the internal business competition), and corporate Call for Ideas.

Online application form: regardless the stage of development, start-ups/innovative projects can apply to PoliHub through the online application form "*Entra in PoliHub"* always available in the PoliHub website[34]. Applicants are requested to fill the form by inserting the most relevant information about their projects, i.e. project title, industry, stage of maturity, business plan or pitch presentation of the project, brief description of the project, and data about team members. On an on-going basis, the Evaluation Team, which includes mainly representatives of the PoliHub Staff, filters and evaluates all the new applications supported by experts from the network of Politecnico di Milano. The main aim of the Evaluation Team is to act as the first gate, thus identifying the most promising projects to present to the Selection Committee. The latter is the second and final gate that decide whether to approve the entrance of the new start-ups in the PoliHub community. More precisely, the Selection Committee, composed of Stefano Mainetti (PoliHub CEO), Claudia Pingue (PoliHub COO), and Roberto Tiezzi (Head of TTO of Politecnico di Milano) meets once a month and judges, during a pitch session, the best projects that passed the first gate of the Evaluation Team. Finally, for the start-ups

[34] http://www.polihub.it/entra-in-polihub/

approved by the Selection Committee, there is the contracting phase in which the administrative office of PoliHub set-up an incubation contract according to the specific requests/needs of the teams.

Switch2Product (the internal Call for Ideas): this is the internal call for ideas created and managed by PoliHub in collaboration with Politecnico di Milano. The call is opened to aspiring entrepreneurs coming from the Politecnico di Milano's network, i.e. students, researchers, PhDs, teachers. The aim of the call is to support and boost young entrepreneurs with innovative ideas/projects in turning their ideas into innovative products on which building business models. After the initial application and selection phase, a jury composed mainly of representatives of PoliHub, Politecnico di Milano, and experts, selects the most promising ideas that will be awarded with a seed investment and a business acceleration programme in PoliHub.

Corporate Call for Ideas: another way for joining the PoliHub community is by participating to Corporate Call for Ideas. Indeed, the best projects/start-ups selected during each Corporate Call for Ideas, usually, guarantee the access to acceleration programmes within PoliHub whose length strictly depends on Call programs. Besides acceleration programmes, some Calls also provide winners with a period of free incubation in PoliHub after the end of the Call. I provide the details of three corporate call for ideas at the end of this chapter.

4.5 Value proposition – Start-up service portfolio

PoliHub – Start-up district and incubator is a university incubator managed by *Fondazione Politecnico*. Its mission is to *support high innovative start-ups with scalable business models, and fostering cross-fertilization processes among University and companies willing to innovate.*

After many years of experience working with start-ups, PoliHub has developed a structured value proposition made of a rich portfolio of services for incubated start-ups.

The figure below summarizes the portfolio of services available for start-ups.

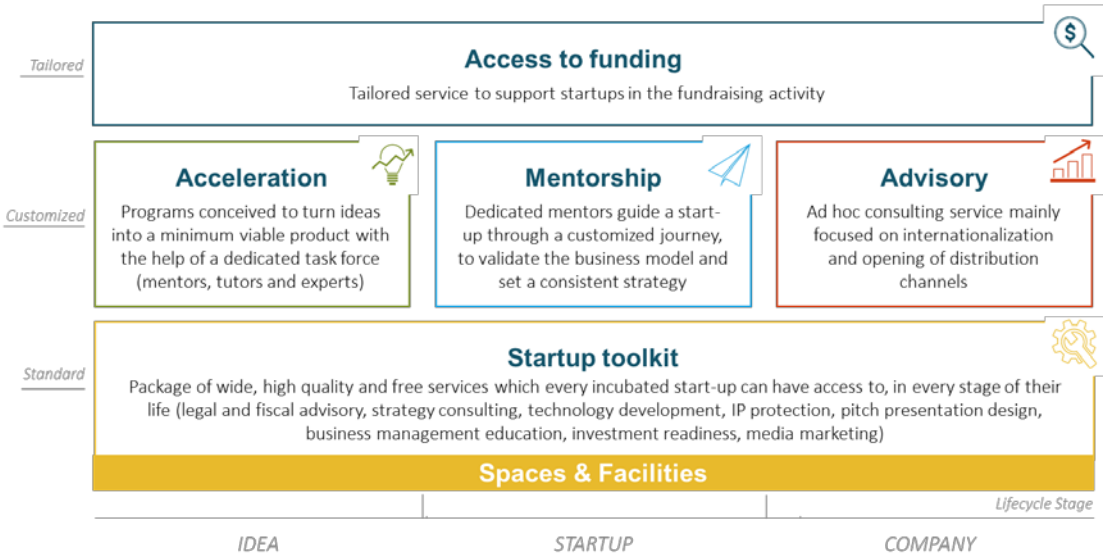


Figure 10. Start-up service portfolio

4.5.1 Start-up toolkit

Start-up toolkit it is a service conceived to turn ideas into a minimum viable product (MVP) with the help of a dedicated task force made mainly of a mentor, a tutor, and several experts of different fields that are associated to each start-ups according to the field of interest of the start-up. This set of services is available for all the start-ups hosted in PoliHub.

It provides a number of standard high quality services that satisfy general basic needs of early stages start-ups. In the following, the main services that make up the start-up toolkit.

Education: online courses dedicated to PoliHub start-ups in order to support young entrepreneurs who needs management tools to succeed in their business. The training path is developed in partnership with MIP - School of Management of Politecnico di Milano. The main subjects are Project Management, Global Business, Organization and Processes, Marketing, Strategy, Accounting, Finance, Digital Transformation, Big Data Analytics, declined into the start-up context. Specific focus is dedicated to practices ready to use by entrepreneurs immediately after the course.

Strategy consulting: high-level consultancy from a task force of experts, professionals and serial entrepreneurs to design and execute a long-term strategy. The consultancy service is supplied by *Deloitte*[35], very famous Consultancy Firm with more than 244,400 professionals at member firms delivering services in audit, tax, consulting,

[35] Source: https://www2.deloitte.com/global/en.html

financial advisory, risk advisory, and related services in more than 150 countries and territories. A corner of the Consultancy Firm is dedicated at the first floor of Polihub building where 2 consultants are available to provide feedbacks and support to start-ups for all the issues regarding business strategy and modelling. In addition, consultants can build direct links between start-ups and Deloitte clients whenever opportunities of synergy rise.

Legal & Tax service: consultancy about ordinary legal, fiscal, tax-related, commercial and notarial issues (e.g. start-up founding, trademark registration, contracts editing and review,etc.). The service is supplied in partnership with the law firm *Studio Legale Crupi e Associati* of Milano. Even in this case 2 professionals of the law firm have a dedicated corner inside the PoliHub building so that start-ups can benefit of the services right when they need it.

Investment Readiness: services provided to start-ups in order to support them in being adequately prepared to face investors and raise funds. The most common tools adopted are workshops, investor office hours and Demo Days. Workshops are monthly seminars open to both incubated and not incubated start-ups with a spokesperson of the investor ecosystem that speaks mainly about new venture funding, investor negotiation, trends in the private equity ecosystem. The main goal of workshops is to provide entrepreneurs with the basic knowledge of the investment world, with competences about new venture funding mechanisms, and how to talk in a common language. During investor office hours start-ups' entrepreneurs meet with investors that will share feedbacks and answer questions and doubts about entrepreneurial firms. Finally, Demo Days are events usually organized twice a year at the end of the tutorship and mentorship programs. During Demo Days, start-ups present their projects in front of an audience made of PoliHub Staff, Mentors and experts, Investors, Corporate Partners, and MIP Students. The main goals are the following: (i) provide start-ups with diverse feedbacks coming from different experts with different backgrounds; (ii) give start-ups visibility especially in the corporate world; (iii) give PoliHub stakeholders easy access to PoliHub deal flow in periodical events.

Presentation Design: service dedicated to start-ups that need support in the preparation of a backbone presentation of the entrepreneurial project ready to be used in every networking opportunity, i.e. presentations in front of investors, customers and stakeholders. Moreover, this service is also conceived to create awareness about the

importance of communicating properly, and to improve information design and public speaking skills of all the team members.

IP Service: support for prior art analysis about intellectual property. This service is provided in partnership with TTO (Technology Transfer Office) of Politecnico di Milano that offers its services and consultancy to start-ups during the whole patenting process.

Polimi Network: by being part of the PoliHub community, start-ups have the possibility to get in touch and collaborate with the extraordinary expertise of teachers, researchers, PhDs and students of the Politecnico di Milano.

Media Marketing: incubated start-ups are promoted across the Polihub institutional broadcasting channels and online magazine to gain quick visibility in the innovation ecosystem.

4.5.2 Acceleration

The acceleration is a set of service conceived for early stages start-ups that need to turn the idea into a Minimum Viable Product (MVP) through a process of business model design and customer discovery. The access to the acceleration is granted to start-ups winners of calls for ideas, e.g. Switch2Product (S2P – the internal business competition), or corporate calls for ideas that are vertically focused on specific industries or technologies (described in details in the paragraph 4.6).
The journey lasts from 3 to 6 months and it is divided in two important phases:

Empowerment & Education: 2-months training program for aspiring entrepreneurs focused on start-up basic knowledge (e.g. Lean Start-up, Scrum Methodology, etc.) needed in order to fully benefit from the support provided by the dedicated task force during the following phase. The education service is provided in collaborations with MIP. Moreover, during the first two months, accelerated start-ups are also provided with the set of services included in the *Start-up toolkit*.

Dedicated Task Force: a mentor, a tutor, and an expert compose the task force that is assigned to each accelerated start-ups in order to support them in the development of their projects/business model by working intensively and by setting periodical checkpoints. The goals of the dedicated task force are: (i) make recommendations on enterprise development, (ii) identify areas that need tightening up and support, (iii) test assumptions entrepreneurs have made, and (iv) work with start-uppers to develop/fine-tune some objectives for the coming months.

4.5.3 Mentorship

The mentorship program is a 4-months journey designed for incubated start-ups in a phase of customer validation that need support in business model development for what regards partnerships, medium/long term strategies, revenue model fine tuning, and fundraising. The support is provided by 2 mentors specifically chosen to match his/her expertise to start-up needs, in order to get faster to the long term strategy definition, business model validation and execution. Moreover, once a month, reviews are scheduled with PoliHub staff in order to monitor improvements, solve possible impasses, set or re-adjust new goals and keep track of the program both from the start-up and mentors point of view. Finally, during the mentorship program, start-up may also assist to pitch training workshops during which start-ups can test their pitches in 1-to-1 pitch reviews and rehearsal session.

PoliHub Mentor Club provides the mentorship service. It is composed of successful actors of different areas of innovation, who help start-ups growing, by improving their products, services and strategies. In particular, the main profiles of mentors are the following:

- **Top managers** who managed important projects in multinational companies with a successful track records (e.g. CMO, COO, CFO).
- **Professionals/consultants** leveraging on the expertise in a vertical field can support entrepreneurs on specific issues (e.g. lawyers, consultants, accountants).
- **Entrepreneurs** with a strong track record in launching new ventures (e.g. co-founders, serial entrepreneurs).
- **Experts** that can provide a deep technical knowledge useful for start-up improvement (e.g. engineers, professors, researchers).
- **Investors/business angels** who, beyond being mentors, are directly interested in investing and/or belong to an investors' network. (e.g. former entrepreneurs, former executives).

4.5.4 Advisory

The advisory refers to an ad-hoc consulting service mainly focused on internationalization and opening of distribution channels. For instance, the main initiative, within PoliHub, aimed at fostering the internationalization of start-ups is the

Business Acceleration Camp (BAC) in Manchester in collaboration with InnoVits Lab[36] and The Next Step[37]. BAC consists in a week of acceleration programme aimed at providing Italian start-ups with the basic knowledge needed for boosting the internationalization process in the UK market. Start-ups may also benefit from BAC since it allows them to get in touch with important UK players that may be useful for future businesses.

Besides the internationalization program, the advisory program includes also a program of business development focused on opening distribution channel. It consists in an ad-hoc consulting service for mature start-ups needing to implement a commercial strategy and build distribution channels.

4.5.5 Access to funding

The access to funding service aims at supporting start-ups along all the lifecycle stages in the process of new venture funding. More precisely, the access to funding program is composed of four different services:

Business plan review: service provided to start-ups that demonstrate the need of a stronger support under a business point of view. PoliHub staff and consultants in the network are available to provide customized support to write, review, adjust and fine tune the Business Plan, in order to obtain a complete and correct document ready to be delivered to interested investors or partners. The main goal of such service is to double check the formal accuracy of the document thanks to the help of business experts.

Investor scouting: cherry-picking activity personally carried on by the Investor Relations Leader. It consists in knowing deeply the projects, their potentials and their financial needs in order to make focused introductions and matches with selected potential investors (venture or corporate) in PoliHub network. There are mainly 2 goals underline such a service: (i) to help entrepreneurs in the fundraising phase, in order to increase the resources dedicated to a very time consuming and delicate activity, and (ii) to increase the number of introductions, in order to enhance the probability of success,

[36] **InnoVits Lab** is a consulting company that helps start-ups and companies to reduce business risk inherent in projects with high technological and market uncertainty, leveraging our assessment competence, facilitating the funding process and promoting collaboration between start-ups and managers. (http://innovitslab.com/)

[37] **The Next Step** is a consulting company based in Manchester that aims at providing Business Owners with solid strategies for growth and supporting entrepreneurs and managers in their business development strategies both in Italy and in the UK. (http://www.thenextstep.it/)

leveraging on the mutual trust relationship that PoliHub can build with the players in the ecosystem.

Demo-day: networking events organized ad-hoc for a pool of interesting start-ups for a selected group of investors. Grouping rules are industry-specific and based on investor profile (early stage, seed, rounds,..). Demo Day may generally have different formats such as:

- Pitch session (5 minutes pitch + 10 minutes Q&A) + One-to-One session (30 minutes follow-up meeting to in-depth analysis with interested investors)
- Speed Date (5 minutes pitch)
- Investors dinner

Generally, the goals of the Demo Day are (i) to allow investors to get access to industry-focused projects, (ii) to guarantee a structured follow up moment to entrepreneurs to exchange useful details and get insightful feedbacks, and (iii) to give start-ups exposure to potential investors and create a fertile background for a second meeting.

Deal negotiation: once obtained the interest of an investor, the entrepreneur is not alone. PoliHub provides support also downstream in the process of term sheet analysis and negotiation under a strategic and legal point of view in order to find the best agreement configuration for all the stakeholders. Staff and consultants can identify opportunities and threats of the agreement in order to find the best configuration possible for all the stakeholders. The goals of such a services are mainly two: (i) provide an impartial feedback about term sheet clauses, and (ii) develop a scenario analysis for a better assessment of the financial decisions impacts on the company strategy.

4.6 Value proposition – Open innovation service portfolio

Besides start-ups, the value proposition of PoliHub targets corporates as well. Indeed, it includes services to provide to corporates interested in open innovation initiatives. The figure below summarizes the portfolio of services available for corporates.

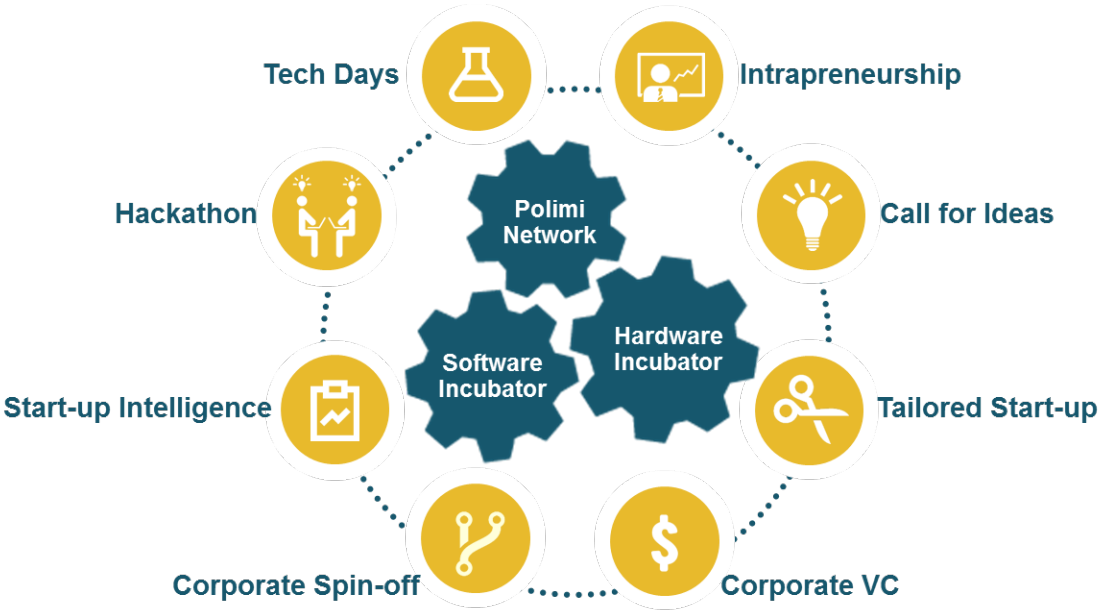


Figure 11. Open innovation service portfolio

Call for ideas are particular services based on the scouting of innovative entrepreneurial projects related to the fields of interest of the corporate. Usually, the final objective of the corporate is to find some innovative projects/start-ups to collaborate with or to invest on in order to innovate the offering with an innovative technology or to solve some internal issues at a very low cost. Indeed, very often it is easier to buy a not core technology instead of developing it internally.

Usually, such initiatives start with several preliminary meetings between the corporate and the incubator in order to define the objectives and the fields of interest of the corporate and decide together the terms of the collaboration contracts. Therefore, after this preliminary stage, PoliHub launches the call, and together with the corporates, advertise it within both the incubator and corporate networks in order catch as more innovative projects as possible. The length of the scouting phase strictly depends on the particular programme, but usually it lasts 3 to 6 months. After the collection of the applications, a pool of vertical experts chosen from both the sides (i.e. PoliHub and corporate) selects the most promising projects[38] that usually have access to the acceleration phase. During

[38] It is very common to select the most promising projects by means of a pitch competition.

the acceleration programme, tutors and mentors from the PoliHub pool support the selected teams in developing their projects and in writing a detailed business plan in order to become attractive to the eyes of the corporate. Besides tutorship and mentorship, the acceleration programme includes also lectures focused on particular topics like financials, marketing, and success story case studies. The call for ideas usually ends with the selection of the top-3 ideas (similar to Demo-day) that very likely start collaborations with the corporate.

Tailored start-up is a particular service provided to corporates in order to shape a start-up in order to make it fit with the corporate. The main corporate objective for the corporate is to find an (or even more than one) innovative start-up to collaborate or to merge with/acquire in order to create a new business unit or solve problems related to a new technology. As in the call for ideas, even in this case it is important to understand clearly the desires of the corporate. Indeed, the PoliHub staff will rely on the corporate desires for shaping the start-up business model and make it fit well with the corporate. Besides this, it is also important to identify the right start-up to work on. In doing so, usually PoliHub scouts within its network selecting the best innovative projects which business models are close to the one desired from the corporate. The main difference from the call for ideas is that the scouting and selection happen in a stealth way (i.e. without adopting a public call), and the selection process is stricter than the traditional call for ideas because of more precise requests of the corporate. Therefore, after the selection of the best entrepreneurial projects, a tutor supports them in shaping their business models in order to align them to the corporate needs. The length of this phase strictly depends, on the one hand, on how much the start-up business models are far from the corporate needs, and, on the other hand, in the willingness of the teams to modify and shape their business models. Moreover, another difference from the call for ideas lies in the level of involvement of the corporate. Indeed, in this case, it is important to involve during the *"shaping process"* corporate representatives in order to keep the focus on the corporate objectives. At the end of the *"shaping process"*, the best start-up that matches the corporate desires starts the collaboration with the corporate.

Corporate VC is a service offered to corporates that want to invest on start-ups in order to diversify their portfolio of investments. Besides risk diversification, corporates may be also interested in investing in new innovative technologies in order to start co-development partnerships instead of the traditional M&A. Therefore, in order to provide

such a service, PoliHub scouts within its network of start-ups and chooses the best start-ups/ projects that may satisfy the corporate needs. Consequently, the mature start-ups that are more likely to succeed and perform well, thus making investors gain from their investments after an exit or IPO, are good choices in case of corporates interested in just investing. Instead, research projects focused in innovative technologies are most aligned need of corporates looking for new technologies. After the selection, PoliHub mediates the contracting phase between the corporate and the start-up.

Corporate spin-offs refers to the possibility offered by PoliHub to corporates that, given innovative projects developed within R&D laboratories or by employees, want to continue the development of such projects far from the influence of the parent's brand and business as ad-hoc start-ups. There are three main motivations underlying such a decision. First, the necessity to quickly develop the new business in order to enter the market as fast as possible. It might be difficult to act quickly within a corporate. Indeed, the high bureaucracy, that usually characterize corporates, makes the decisional process very slow thus hampering the development of new technologies/projects. Secondly, very often projects that corporates decide to develop outside its boundaries are projects that, even if highly innovative, are catalogued as not core or cross-functional. Therefore, since they have not a unique business unit responsible for their development, it is likely that these projects are abandoned thus resulting in failures. Finally, since very often new intrapreneurial projects target new markets not so close to the core business, a failure in the development of projects or a failure related to products may damage the image/brand of the corporate in these new market thus negatively affecting the corporate. For all these reasons, corporates may prefer to let these start-ups grow and develop their products and business models in an incubator instead of their laboratories. As for PoliHub, these start-ups are similar to the traditional ones. Thus, they have access to the services portfolio described in the paragraph 4.5.

Start-up intelligence is a service provided mainly by Digital Observatories and MIP who, basing on their research activities that they usually perform, are able to transfer their expertise about particular markets and industries to interested clients. Usually, the way adopted to transfer this knowledge is through workshops and seminars where participating corporates may examine in depth a new market or industry in order to be aware about new technological/economic trends that are characterizing those markets, or analyse who innovators are and how they are behaving in the market. Moreover, besides

motivations related to the knowledge of the industries, corporates may also be interested in entering/participating in a network of innovators since workshops are usually offered to many corporates at the same time.

Hackathons is a design sprint-like event in which computer programmers and others involved in software development, including graphic designers, interface designers, project managers, and others, collaborate intensively on software projects. Occasionally, there is a hardware component development. Hackathons typically last between a day and a week. The main benefits for corporates adopting this kind of open innovation service is related to branding and image building since it provides high visibility among technicians and developers that will be involved. Moreover, another motivation that justifies the choice of a hackathon is that, in a very short period, the corporate can either spread or test a new technology/software among developers that will use it during the hackathon, or have access to work-in-progress technology/software developed by participants.

Tech days is the latest service of open innovation introduced in the service portfolio that aims at joining corporates with researchers. The provision of such a service is done through two main ways: (i) starting from a common interest among different corporates, PoliHub scouts a pool of researchers from its network that will present in front of all the corporates in a joint seminar focused on the particular vertical of interest. (ii) Starting from a corporate request asking analyses about different verticals, PoliHub scouts a pool of researchers and experts that will present in one-to-one meetings in front of the client corporates. Usually, the main objective of the client corporate is to start co-development partnership with researchers involved in the development of new emerging technologies.

Intrapreneurship refers to particular seminars organized for corporates that need deep analyses about the technological/economic trends of a particular market/industry. The main differences from start-up intelligence lie in the seminars' coordinators and in the audience. Indeed, while start-up intelligence events are organized and offered to many corporates at the same time and the topics are chosen by MIP and Digital Observatories (seminars' coordinators), innovation days are organized and offered by Polihub to single corporates that request a deep analysis on a particular industry. Beside seminars, usually PoliHub organizes also workshops aimed at helping a team of corporate representatives in developing new innovative ideas.

Chapter 5: Case study analysis: results from the interview

In the previous chapter I have described the business model and value proposition of PoliHub – Startup District and Incubator. In this chapter instead I describe the three cases of study I will rely on for illustrating the framework introduced in the third chapter.
More precisely, after the detailed description of the three corporate initiatives in which PoliHub is involved as coordinator of the acceleration programmes, I analyse the criteria underlying the selection of the three calls, the method used for the selection of key informants and for collecting the information. Finally, I will present the main results of the interviews that I will discuss within the next and final chapter.

5.1 Case 1 – BioUpper (Call for Ideas)

BioUpper is an initiative promoted by *Novartis Italia*[39] and *Fondazione Cariplo*[40] and realized in collaboration with Fondazione Politecnico di Milano, through its incubator PoliHub and the scientific validation of Humanitas[41]. By partnering together these actors are able to provide start-ups all the support needed for growing in the biotech/healthcare industry. BioUpper is the first Italian training and acceleration platform that provides support for new entrepreneurial ideas in the field of life sciences. The program targets aspiring entrepreneurs with ground-breaking product and/or process projects, supporting them through a tailored empowerment path and providing facilitated access to resources, facilities and relationships in the medical and scientific ecosystem. The goal of BioUpper is to enhance and reward the best ideas in order to transform innovation excellence into viable operating models, thus actively participating in the economic development of the Country.

[39] Novartis is a Swiss multinational pharmaceutical company based in Basel, Switzerland. It is one of the largest pharmaceutical companies by both market cap and sales. The businesses of Novartis are divided into three operating divisions: Pharmaceuticals, Alcon (eye care) and Sandoz (generics). (https://www.novartis.it/)
[40] Fondazione Cariplo è un soggetto filantropico che concede contributi a fondo perduto alle organizzazioni del Terzo Settore per la realizzazione di progetti di utilità sociale. Fondazione Cariplo opera in quattro aree: Ambiente, Arte e Cultura, Ricerca Scientifica, Servizi alla Persona. I contributi sono assegnati principalmente attraverso vari strumenti erogativi: bandi, erogazioni emblematiche, territoriali, istituzionali e patrocini. (http://www.fondazionecariplo.it/)
[41] Humanitas è un ospedale ad alta specializzazione, centro di Ricerca e sede di insegnamento universitario. All'interno del policlinico, accreditato con il Servizio Sanitario Nazionale, si fondono centri specializzati per la cura dei tumori, delle malattie cardiovascolari, neurologiche ed ortopediche, oltre a un Centro Oculistico e a un Fertility Center. Humanitas è inoltre dotato di un Pronto Soccorso EAS ad elevata specializzazione. (http://www.humanitas.it/)

The application areas include: (i) *Biotechnologies for medical sciences,* (ii) *Digital tools at the service of health and medical devices*, (iii) *Patient or health-oriented services (also supported by digital tools).*

The call is open to start-up initiatives proposed by subjects not yet constituted in legal form or constituted in legal form for less than 12 months from the application date. The eligible subjects are aspiring entrepreneurs (over 18 years old, individually or in teams), falling under the following categories:

- Employees, contractors and professionals from the private sector and public administration
- Graduates from primary, secondary and higher educational institutions
- University students or professors, graduates, graduate students, researchers and temporary research fellows.

After an initial selection process, the selected projects participate in a training and acceleration program coordinated by PoliHub, as described below:

A training week + pitch presentation offering the 20 best projects selected a training course aimed at enhancing the innovative entrepreneurial idea. The full-time Training Week lasts 6 days and involves frontal training opportunities alternating with meetings with key national and international entrepreneurs operating in the field. Under the supervision of mentors and tutors, individual and/or team activities also take place, in order to expand the project proposal and prepare an effective pitch presentation. At the end of the program, the projects are presented during a pitch session in front of a Jury, nominated by Novartis e Fondazione Cariplo that selects a maximum of 10 projects, which access the Acceleration Program.

An Acceleration Program specifically thought and designed for the particular needs of the selected projects, allowing to strengthen the technical and entrepreneurial skills and to support concretely participants in the development of their projects. The Acceleration Program lasts 10 weeks and includes the consolidation of the team and the business plan through training sessions, networking meetings with key national and international sponsors (business angel, venture capitalists) and professional support by consultants, industry experts, established entrepreneurs, university professors, researchers, etc.

A voucher for € 50,000 (VAT included), awarded respectively to the three best business plans for the exclusive purpose of using further specialized consultancy and services/activities to develop the business plan and make effective the go-to-market

phase. Both Novartis and Fondazione Cariplo provide the vouchers and they are specifically destined to the development of entrepreneurial activities.

5.2 Case 2 – NextEnergy (Call for Ideas)

NextEnergy is an initiative promoted by Terna S.p.a[42] and Fondazione Cariplo and realized in collaboration with PoliHub. The goal of NextEnergy is to enhance and support the development of innovative entrepreneurial projects in the field of electric grid in order to participate actively in the economic development of the Country. The program targets aspiring entrepreneurs and innovative teams with innovative projects, supporting them through an entrepreneurial empowerment programme. Besides innovative teams, the call targets young talents as well. I will not describe the call for talent since it is not in line with the aim of this paragraph.

The application areas of the NextEnergy programme include: (i) *Smart grids & energy storage*, (ii) *Electric system infrastructures.*

The call for ideas is open to entrepreneurial projects/start-ups that meet the following requirements:

- Innovative projects proposed by aspiring entrepreneurs over 18 years old, individually or in teams not yet constituted in legal form or, if constituted, for less than 12 months from the application date.
- Participating teams must be focused on projects/technologies with a TRL (*Technology Readiness Level*) between level 2 and 8 (as defined in the Annex of Horizon 2020 – Work Programme 2014-2015 of the European Commission)[43]
- Regardless the project is already a start-up, the team must include at least a recent graduate member under 35 years.

The Call for ideas aims at selecting the best 10 projects/start-ups that will participate through an entrepreneurial empowerment and an acceleration programme coordinated by PoliHub, as described below:

[42] Terna Group is a group of energy companies based in Rome, Italy. With 63,500 kilometres (39,500 mi) of power lines or around 98% of the Italian high-voltage power transmission grid, Terna is the first independent electricity transmission grid operator in Europe and the sixth in the world based on the size of its electrical grid. Terna is listed on the Borsa Italiana and it is a constituent of the FTSE MIB index. (http://www.terna.it/)

[43] Source: http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

Entrepreneurial empowerment: training programme that involves frontal training opportunities alternating with meetings with entrepreneurs, experts, and investors operating in the field. The main goal is to provide teams with specific knowledge and tools useful to consolidate their projects and strengthen their skills and entrepreneurial attitudes. In this ways, teams may develop a better evaluation capacity that allows them to identify new opportunities, to manage better the risk, and to learn from mistakes.

An acceleration programme specifically thought and designed for the particular needs of the selected projects, allowing to strengthen the technical and entrepreneurial skills and to support concretely participants in the development of their projects. The Acceleration Program lasts 6 months and overlaps with the entrepreneurial empowerment. During the acceleration program, dedicated mentors and tutors will support individually the teams working on the development of their projects with the aim of reaching concrete results and validation by the market (prototypes, technical testing, market testing, refinement of solutions already at an advanced stage of development, etc.).

At the end of the acceleration programme, the 10 teams will present their projects during an elevator pitch session in front of a Jury that will select the best 3 entrepreneurial projects that will be rewarded respectively with vouchers of € 50.000 (the 1st best project), € 30.000 (the 2nd best project), and €20.000 (the 3rd best project). The vouchers are for the exclusive purpose of using further specialized consultancy and services/activities to develop the business plan and make effective the go-to-market phase.

5.3 Case 3 – Unlock Your Ability (Call for ideas)

The "Unlock your ability" Challenge is an initiative promoted by ABB S.p.A.[44] – ABB SACE Division and realized in collaboration with PoliHub.

The program targets aspiring entrepreneurs with innovative business ideas (product or service), oriented projects, supporting them through a tailored empowerment path and through the facilitated access to resources, facilities and relationships in the energy distribution ecosystem.

[44] ABB (ASEA Brown Boveri) is a Swedish-Swiss multinational corporate headquartered in Zürich, Switzerland, operating mainly in robotics and the power and automation technology areas. It ranked as the 286th largest company by revenue for 2016 in the Fortune Global 500 list. ABB is one of the largest engineering companies as well as one of the largest conglomerates in the world. ABB has operations in around 100 countries, with approximately 132,000 employees in December 2016. ABB is traded on the SIX Swiss Exchange in Zürich, Nasdaq Stockholm and the New York Stock Exchange in the United States. (http://new.abb.com/)

The goal of the Challenge is to enhance and reward the best start-ups and business ideas in the energy distribution field, in order to transform innovation excellence into viable operating models, thus actively participating in the development of a more sustainable and environmental friendly economic energy distribution model.

The application areas include: (i) *Smart energy,* (ii) *Grid edge,* (iii) *Integration of distributed energy generation from renewable sources,* (iv) *Energy Data Analytics & Predictive Analytics,* (v) *Power management & Energy efficiency solutions,* (vi) *Asset monitoring & management. 7*

The call is open to start-up initiatives proposed by subjects not yet constituted in legal form or constituted in legal form for less than 12 months from the application date.

The eligible subjects are aspiring entrepreneurs (over 18 years old, individually or in teams), falling under the following categories:

- Employees, contractors and professionals from the private sector and public administration
- Graduates from primary, secondary and higher educational institutions
- University students or professors, graduates, graduate students, researchers and temporary research fellows.

Projects can be proposed by teams or individuals. In the case of a team proposal, the maximum number of team members is four.

After an initial selection process, the selected projects participate in a training and acceleration program coordinated by PoliHub, as described below:

Innovation Training & pitch presentation offering the 20 best projects selected a live-streaming training course aimed at enhancing the innovative entrepreneurial idea. The training is followed by a month of remote support by dedicated tutors from PoliHub, who will help each team put into practice the lessons learnt during the training sessions. At the end of the month, the projects are presented at a pitch session in front of a Jury, nominated by ABB and PoliHub, that selects a maximum of 3 projects which access the Acceleration Program.

Acceleration Program, taking place at ABB premises, specifically thought and designed for the particular needs of the selected projects, allowing to strengthen the technical and entrepreneurial skills of the teams and to concretely support Participants in the development of their projects. The Acceleration Program lasts 6 months, during which

the selected teams will be supported by dedicated tutors and mentors from PoliHub and ABB.

The Acceleration Program includes:

- co-development of the product/service with experts from ABB on ABB premises in Bergamo (Italy);
- development of a tailored technical and business development path;
- consolidation of the team and the business plan through training sessions;
- networking meetings with key national and international sponsors (business angel, venture capital);
- professional support by consultants, industry experts, established entrepreneurs, teachers, researchers, etc.

For the participation to the Acceleration Program, the teams will receive a flat-rate reimbursement of 1500 € per month (1000 € for one-person teams). By the end of the Acceleration program, the teams are expected to present the following deliverables: (i) a working prototype (minimum viable product) tested in operational environment, (ii) a detailed business plan with projections on a 5 years time frame.

At the end of the Acceleration Programme, the accelerated teams will present the results achieved during the Acceleration Program in front of a panel composed of ABB Managers, PoliHub experts and investors.

5.4 Criteria for the selection of the calls

In the previous paragraphs, I have introduced the three Corporate Call for Ideas, respectively BioUpper, NextEnergy, and Unlock Your Ability, which I rely on in order to illustrate the *Corporate-Incubator collaboration framework.*

In particular, I have performed interviews to relevant actors from the corporate, the incubator and the start-up side. In this way, I am able to check whether the assumptions and propositions I have presented in the third chapter about the framework hold.

However, before introducing the results of the interviews, I first need to explain the main points of variety among the three corporate initiatives that justify my selection: *stage of maturity of the Call, offering to participating start-ups, targets of the Call, and Corporate objectives time horizon*. Indeed, by collecting data from different and diverse case studies I can rely on a modest amount of comparative data thus I am able to generalize the results I introduce in the final portion of this chapter. Furthermore, by proceeding in this way, I

can “triangulate” or establish converging lines of evidence to make my findings as robust as possible (Yin, 1984).

Stage of maturity of the Call: A first element of difference across the selected calls for ideas refer to their stage of maturity. Indeed, to date, BioUpper is in the ending phase of the second edition of the call, NextEnergy is in the ending phase of the first edition of the call, while Unlock Your Ability is at the very initial phase of the first edition. Considering the differences among the three calls regarding the stage of maturity, it is possible to place them in a revised learning curve as shown in the figure below.

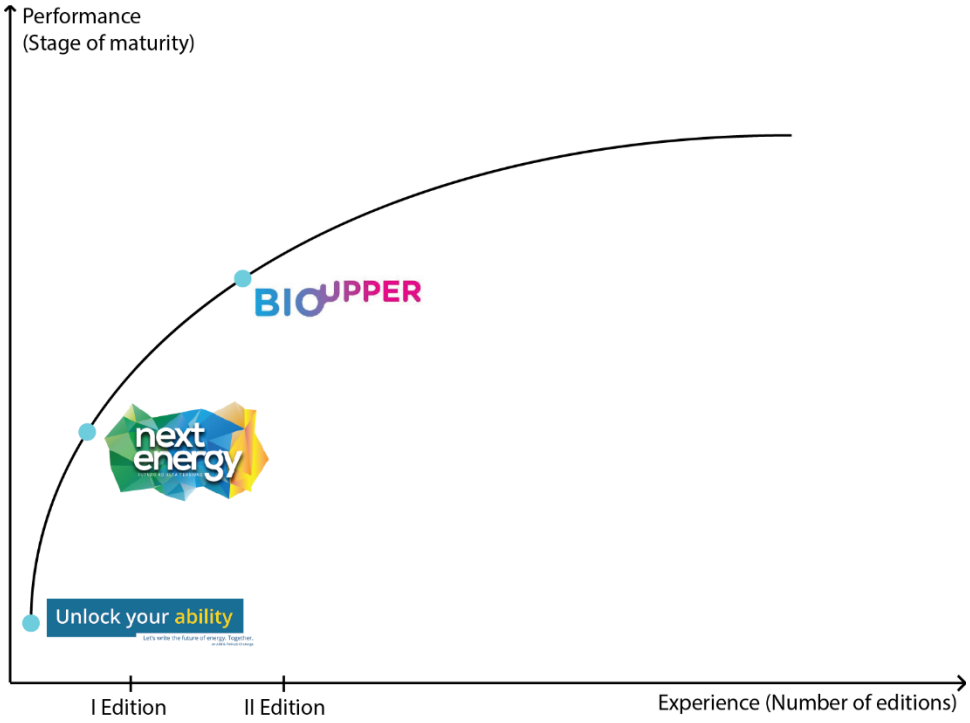


Figure 12. Calls for ideas position in the learning curve

In particular, the hypothesis underlying the positioning of the three Calls is that *the stage of maturity of the initiatives is directly proportional to the number of editions*. Indeed, I am assuming that the number of editions of the same call are a measure of the stage of maturity. Indeed, alike traditional learning curves, the more a task (in this case the call) is repeated over time, the higher the performances (in this case the stage of maturity of calls). Indeed, relying on experience collected during past editions of the same initiatives surely allow the parties involved in the organization of the call to avoid mistakes and to reproduce the best practices learned in prior editions. Conversely, during the first edition of the call the organizers cannot rely on past editions for identifying potential mistakes or best practices. Consequently, following this reasoning, I place BioUpper in the highest

positioning related to the other initiatives since the two editions almost completed allowed the organizing parties to cumulate enough experience to run the programme more efficiently and effectively. In contrast, Unlock Your Ability is at the beginning of the curve since, to date, the organizing parties are just starting the first edition of the initiative.

Offering to participating start-ups: The second element of difference across the three corporate initiatives arises from the analysis of the programmes of each call described in the previous paragraph. Indeed, by considering the offerings to start-ups participating to each acceleration programmes, it is possible to highlights some small (but relevant) differences. On the one hand, BioUpper and NextEnergy are very similar calls even with slight differences in the length of the acceleration programme and the amount of the awards. In particular, both the initiatives provide to the best ideas an entrepreneurial empowerment (through the acceleration programme in the PoliHub facilities) mainly focused on business plans development. This is the reason why the main support to teams during this phase is provided by mentors and tutors from the PoliHub network. Furthermore, in both cases, grants are provided to the best 3 entrepreneurial projects at the end of the acceleration programmes in order to provide them with a financial support during the early stage.

On the other hand, Unlock Your Ability provides an acceleration programme that is slightly different from the other two calls. Indeed, since the expected outcomes of each project participating to the acceleration programme is not just the business plan but also a working prototype tested in operational environment, the best ideas are relocated to ABB premises in Bergamo (Italy) where are supported by tutors and mentors from both PoliHub and ABB. In this way, accelerated teams have the opportunity to get in touch with the ABB environment and networks thus having higher potential opportunities of collaboration with ABB. Finally, it is possible to highlight another difference existing between the ABB's initiative and the Novartis's and Terna's ones. Indeed, with regards to the economic support granted to best teams, while Novartis and Terna provide a voucher to the three best projects at the end of the acceleration programme, Unlock Your Ability provides an "on going" economic support to teams participating to the acceleration programme[45] mainly aimed at allowing them to participate full-time to the programme.

[45] 1500 € per team (or 1000 € for one-person team)

Targets of the call: A third element of difference across the calls arises by analysing the target of the Call. Although the targets of all these corporate calls are entrepreneurs or young start-ups (less than 12 months) with innovative projects, the three calls differ in terms of specific industry and in terms of the international scope of the call (i.e. whether the call is for just national teams or even international). With regards to the specific industry of the call, it mainly depends on the core industry of the corporate organizing the initiative. Thus, both NextEnergy and Unlock Your Ability initiatives focus on the energy field (as the core industry of both Terna and ABB), whereas BioUpper focuses more specifically in the pharma and healthcare industry (as the core industry of Novartis). However, the most important difference stands in the scope of the call. Indeed, while both BioUpper and NextEnergy focus just on the Italian environment, Unlock Your Ability aims at targeting both national and international entrepreneurs.

Corporate objectives time horizon: finally, the three selected calls for ideas differ in terms of goals of the corporate underlying the initiative. More specifically, as also shown in the interviews presented within next paragraphs, besides the common objective of supporting start-ups in defining their business models and finalizing their offering, the three corporates have different "individual objectives" with different time horizons. Indeed, Novartis aims at attracting both institutions and formal investors in order to make of the Biotech industry the focus of higher future investments over the long-term. Terna aims at exploting NextEnergy as an open innovation opportunity over the medium time horizon. ABB, instead, has a more short-term orientation with its goal of asking for start-ups support in pursuing a digital transformation and brand reputation.

5.5 Method used for the selection of key informants and collection of the information

Clarified the elements of variety that justify my selection of the three aforementioned calls, I now describe the method I have used for performing the interviews, i.e. how and why I chose the relevant players to interview and what I asked them in order to illustrate the framework presented in the third chapter of this thesis.

First, for each call for ideas, I interviewed multiple key informants. Indeed, I performed interviews to the project managers from both the corporate and PoliHub side. This choice aimed at collecting information and considerations from the two opposite players involved in the collaboration. Furthermore, in order to elaborate further on the answer

provided by both the project managers, I match their considerations with perceptions of the supported start-ups about potential outcomes. Therefore, I performed interviews also to some accelerated start-ups in order to get a third point of view. This was possible just for already operating Calls like BioUpper and NextEnergy. Conversely, with regards to Unlock Your Ability, I was not able to collect interviews from accelerated start-ups since to the call is just at its very initial phase, i.e. collection of the applications.

The selection of the different key informants is for performing the *triangulation* of the information collected through different sources. Indeed, as also Yin (1984) suggests, "*in collecting case study data, the main idea is to triangulate or establish converging lines of evidence to make findings as robust as possible"*. (Yin, 1984)

By proceeding in this way, I am able to illustrate the underlying the framework and check its solidity and usability from real case studies.

Key informants

The table 6 summarizes the players interviewed, their roles within the companies and their role in the specific call. I need to clarify that from the PoliHub side, Marco Carvelli (Head of Corporate Solutions) is the project manager of all the three corporate calls. However, rather than interviewing just him for each initiatives who would have provided just one point of view, I interviewed also the CEO and General manager of PoliHub, respectively Stefano Mainetti and Claudia Pingue, that are involved in the management of corporate calls as advisors. Furthermore, unfortunately in the moment I performed the interviews, Terna was involved in a change of the Board of Directors' members. Therefore, given the stressful moment going on within the company involving all the important actors including also the project manager of NextEnergy, there was no relevant actor available for answering to my questions. Consequently, instead of excluding this call from the cases included in my analysis, I decided to rely on secondary sources of information.

	NAME	COMPANY	ROLE IN THE COMPANY	ROLE IN THE CALL
BIOUPPER	**Rossana Bruno**	Novartis	Brand Communication Manager	Project Manager
	Stefano Mainetti	PoliHub	CEO	Advisor
	Enza Torino	KYME	Founder	Start-up in acceleration
NEXTENERGY	NA	Terna	NA	NA
	Claudia Pingue	PoliHub	General Manager	Advisor
	Giuseppe Nacci	Elytix	Founder	Start-up in acceleration
UNLOCK YOUR ABILITY	**Antonello Antoniazzi**	ABB	Corporate Executive Engineer	Project Manager
	Marco Carvelli	PoliHub	Head of Corporate Solutions	Project Manager
	NA	Start-up	NA	NA

Table 6. Key informants for each call: names and roles

Interviews

Given the presence of three different points of view, I had to perform three different typologies of interview made of different sets of questions tailored on the specific target of the interview. All of different interviews had a common aim: capturing the main building blocks of the framework explaining the collaboration between an incubator and a corporate in order to illustrate the framework I introduced in the third chapter.

In the following, I report the three sets of questions I used for collecting considerations upon the collaboration respectively from the corporate project manager, incubator project manager/advisor, and start-up participating to the acceleration program representative.

i. Interview with the project manager from the corporate side

- What are the main objectives underlying this call for ideas? Why do you need to get in touch with innovative start-ups?
- Why did you choose an incubator as partner for building up such a programme? What are the main inefficiencies/weaknesses of a corporate in collaborating with start-ups? Instead, what are the main strengths of the incubator that may reduce the inefficiencies of the corporate?

- What are, according to the corporate point of view, the inefficiencies/weaknesses of an incubator? Instead, what are the key elements of the corporate that surely attract start-ups in approaching the call for ideas thus reducing the negative impact of the incubator inefficiencies/weaknesses?
- What are the main synergies that may arise from a corporate-incubator collaboration aimed at building up a corporate acceleration programme?
- Finally, what are the main challenges that may arise during the collaboration that the parties need to manage in order to create a successful and effective acceleration programme?

ii. Interview with the project manager from the incubator side

- What are the main reasons that led you to start collaborations with corporates in order to run an acceleration programme? What are the main inefficiencies/weaknesses of an incubator in supporting start-ups? What a corporate can offer in order to reduce the negative influence of such weaknesses?
- What are, according to the incubator point of view, the main inefficiencies/weaknesses of a corporate? Instead, what are the key elements of the incubator that surely attract start-ups in approaching the call for ideas thus reducing the negative impact of the corporate inefficiencies/weaknesses?
- What are the main synergies that may arise from a corporate-incubator collaboration aimed at building up a corporate acceleration programme?
- What are the main challenges that may arise during the collaboration that the parties need to manage in order to create a successful and effective acceleration programme?
- Finally, why does an incubator want to collaborate with a corporate in running an acceleration programme? What are the main objectives?

iii. Start-up participating to corporate acceleration programme

- According to your point of view, what could the corporate offer to start-ups participating to this acceleration programme that an incubator could not? So, what are the main strengths of the corporate over the incubator?
- Instead, what could the incubator offer to start-ups that a corporate could not? So, what are the main strengths of the incubator over the corporate?
- Which are, according to your point of view, the main advantages that may arise by your participation to such a corporate acceleration programme powered by the

incubator compared to traditional acceleration programme managed just by the corporate or the incubator?[46]

- Instead, which are the potential risks?[47]

The interviews to the key informants above-introduced were mainly conducted during physical meetings in PoliHub offices. Indeed, many of the informants are either living either working in Milan thus were available for a meeting in our offices. However, considering both Mr. Antoniazzi (ABB) and Ms. Torino (KYME), who are neither living nor working in Milan, it was not possible to schedule physical meetings. Therefore, in the latter cases I performed the interviews by means of skype-calls.

Regardless the way I conducted the interviews, I spoke with key informants for almost 40 minutes per interview (280 minutes totally). Each interview was initially based on the questions above-introduced. However, basing on the first answers of the interviewees I usually re-arranged questions aiming at turning interviews from just on Q&A meetings into dialogues of course with the underlying goal of obtaining relevant insights on corporate-incubator collaboration. Coherently with this way of conducting interviews, during the meetings I just took some notes with the key elements resulting from the interviewees answers and I recorder the whole meetings. By proceeding in this way, I was able both to focus the most of my attention to interviewees during the meetings and also to re-listen as many time as needed the interviews during the development of this chapter.

5.6 Main results of interviews

In presenting the results of the interviews performed to the key informants of each call, I first present the most important insights arisen from both the corporate and incubator representatives' answers. Furthermore, I present the perceptions of a start-up participating to the acceleration programme in order to check if these are in line with what both the incubator and the corporate declared. Finally, in the next chapter dedicated to the conclusion, I resume the results of the interviews in the framework presented in the third chapter.

[46] This question is aimed at getting the perception of the start-up about the potential synergies that may arise in a corporate-incubator collaboration.

[47] This question is aimed at getting the perception of the start-up about the potential challenges that may arise in a corporate-incubator collaboration.

BioUpper (Novartis)

In order to analyse BioUpper, the corporate acceleration programme launched by Novartis in collaboration with Cariplo Factory and with the technical support of PoliHub, I interviewed *Ms. Rossana Bruno*, Brand Communication Manager at Novartis, *Mr. Stefano Mainetti*, CEO at PoliHub, and, finally, *Ms. Enzo Torino,* founder of KYME[48] a start-up supported within the specific acceleration programme.

When asked about the strengths of the corporate, both Ms. Bruno, Mr. Mainetti, and Ms. Torino agreed in considering the main strengths of the corporate related mainly to its high availability of capitals useful for supporting start-ups either by directly investing on the most promising start-ups or by establishing co-development agreements. Furthermore, from the analysis of the answers of the three key actors within BioUpper arises that a corporate may provide start-ups with easy access to internal resources and assets like key people and researchers that may provide support by relying on their knowledge on the specific technologies and on specific markets. Moreover, also the network of corporate customers, suppliers, and partners may be useful for start-ups. Indeed, "*a corporate may provide them with a privileged access to its network of both customers and suppliers. In this way, even the customer and market validation needed for start-ups may be accelerated"* (S. Mainetti). Finally, another common answer about the strengths of the corporate regards the high value of the corporate brand. Indeed, *"participating to a corporate acceleration programme organized by a company like Novartis with such a strong brand identity, well established both nationally and internationally, may surely speed up the process of new brand creation and affirmation in the market of our start-ups"* (E. Torino). Regarding the strengths of the corporate, Mr. Mainetti also added a further element never considered so far: "*a corporate acceleration programme is based on actual market needs and allows a different typology of technology transfer process"*(S. Mainetti). Indeed, instead of starting from the research results and then seeking in the market potential interested players, such corporate initiatives start from actual market needs as driver for the research and start-up scouting. "*It is like turning from a push to a pull approach"* (S. Mainetti).

[48] KYME is a start-up based in Naples at the IIT (Istituto Italiano di Tecnologia) that aims at producing medical products for Magnetic Resonance Imaging (MRI) through a patented process combining biocompatible materials with Contrast Agents (CAs) currently in clinical use, without altering its chemical structure. The KYME products make visible anatomical details that otherwise would not be noticeable, providing personalized and more accurate diagnostic analysis with a reduced administration dosage of CAs.

Regarding the strengths of the incubator involved in the collaboration, both Ms. Bruno from Novartis, Mr. Mainetti from PoliHub and Ms. Torino from KYME highlight the high level of expertise of the incubator in organizing and managing such programmes and also the access to academy experts and key people the incubator may provide to start-ups. Indeed, "*with more than 15 years of experience in running such typologies of programmes, PoliHub project managers may rely on a huge expertise and best practices in order to support corporates in setting up a well-structured programme able to concretely support participating start-ups during their growth stage"* (S. Mainetti). Furthermore, another common consideration among the three interviewed players is related to the ability of the incubator of "*acting like an intermediary by fostering the networking"* (R. Bruno). Indeed, especially in the case of a university incubator, it is extremely important to have an actor that fosters and facilitate the collaboration and the communication between the academy and the corporate that are very different from each other. "*In playing such role, the incubator is the best actor because, considering a continuum where the university and the corporate represent the two extremes, the incubator stays in the middle since it provides start-ups both with education and market support"* (R. Bruno). Therefore, being a university incubator surely "*represents an additional value for start-ups since they have the opportunity to be supported also by key players and experts coming from the academy network"* (E. Torino). Finally, S. Mainetti also added another important consideration about the strengths of the incubator, i.e. "*its ability to pre-qualify the deal-flow of start-ups before presenting them to corporate"* (S. Mainetti). Indeed, start-ups participating to the acceleration programme, besides being the most promising ones that went through a tough selection process, have also to go through the acceleration process that require them to be fast, effective and efficient in developing their businesses. At the end of such a process, the winners of the competition are surely those start-ups that performed better during the whole acceleration programme thus the most ready to start collaboration with the corporate.

In analysing the strengths of both the corporate and the incubator, the three interviewed actors agreed in considering the strengths of one party as the main weaknesses of the other.

Therefore, starting from the latter consideration, thus having the two parties involved in the organization of the acceleration programme as complementary one to each other, the analysis of the synergies was straightforward for the three interviewees.

Indeed, despite the huge expertise of the incubator in scouting and selecting start-ups for participating to the acceleration programme, the strong brand of the corporate is surely attractive for start-ups. The same is for its investment capacity that complements the lack of funds of the incubator that usually do not invest directly on start-ups (as the case of PoliHub). Furthermore, by interviewing E. Torino founder of KYME, I came up with an additional insight. Indeed, since KYME already participated to other acceleration programmes organized and managed just by an accelerator, she compared BioUpper with previous experiences highlighting a huge difference. *"In our past experience within an acceleration programme managed just by a private accelerator we felt like we were just simulating something unreal, we did not have the perception of getting closer to real market. Just incubator tutors supported us. Conversely, by participating to the BioUpper programme, we are really getting faster and bettering the go-to-market strategy. In doing so, we are supported by both incubator tutors and mentors and also by experts coming also from the corporate side. This may be the reason why we feel closer to the market"* (E. Torino). Therefore, by mixing the strengths of the two parties running the acceleration programme, the support provided to start-ups is surely better and consequently also the incubator and the corporate have several benefits.

However, during the three interviews, even before asking about the challenges that may arise during the collaboration, the interviewees from the corporate and the incubator side highlighted a risk element that may reduce the positive impact of the aforementioned synergies: the huge difference between the two parties running the acceleration programme. Indeed, as stated by R. Bruno, "*we talk different language compared to the incubator, we are too much bureaucratic thus to slow in taking decisions due to our complex internal structure. On the other side, the incubator is very flexible, as it should be, in order to personalize the services it provides according to specific needs of start-ups"* (R. Bruno). Even if S. Mainetti agreed with R. Bruno on these differences between the incubator and the corporate, he highlights a further consideration about the "different language" among the parties. Indeed, "*it depends on the particular division of the corporate you are talking with when running the programme. For instances, collaborating with the sales and marketing division of a corporate is far more difficult than collaborating with the R&D department or even with the VC division (if existing) of a corporate. The last two mentioned are closer to the incubator environment. They know what we talk about since they already have contacts with star-ups. Conversely, it is very unlikely that the Sales and Marketing division already collaborated with start-ups.*

Therefore, they are far from our environment thus the collaboration is harder." (S. Mainetti).

Finally, I asked Ms. Bruno and Mr. Mainetti about the objectives underlying the collaboration and the acceleration programme. On one side, they both agreed in considering BioUpper an initiative aimed at supporting start-ups in the healthcare industry during their growing stage thus fostering the growth of young and innovative entrepreneurship in the Italian environment. Furthermore, they also highlight their willingness of fostering through BioUpper the integration between research laboratories and key players in the market. However, on the other side, both the interviewees highlight further "individual objectives". In particular, R. Bruno highlights the willingness of Novartis to "*become the first innovation platform in the biotech and healthcare industry thus attracting the attention of both the Italian government and formal investors (like VCs) in order to foster more institutional investments and support for innovative start-ups operating within such an industry. Of course, both the government and investors have to be supported in scouting and selecting the most promising start-ups. And we want BioUpper to provide such a support to investors."* (R. Bruno). Therefore, it is clear that besides the short term objective, i.e. supporting directly start-ups through the participation to BioUpper, Novartis aims also at attracting over the long term more formal investments (e.g. from governments and VCs) in order to provide a different kind of support to innovative start-ups operating in the biotech and healthcare industry.

On the incubator side, S. Mainetti highlights "*the willingness to provide start-ups with more investment and partnership opportunities arising from the collaboration with a corporate. Moreover, this kind of initiatives are a part of our value proposition thus of our revenue model. Indeed, besides supporting start-ups, we also provide services to corporate and such initiatives are exactly an example of what we can offer. The revenues coming from collaborations with corporates allow us also to improve our services to start-ups thus fostering the development of the local entrepreneurship environment"* (S. Mainetti).

Although these objectives are more individual than the common one, they are not in contrast with those of the other party, thus do not represent a source of challenges.

NextEnergy (Terna)

For analysing NextEnergy, the call organized by Terna in collaboration with Polihub, I interviewed *Ms. Claudia Pingue*, General Manager at PoliHub, and *Mr. Giuseppe Nacci*,

founder of Elytix[49] a start-up that participated to the acceleration programme. Differently from the other two corporate initiatives, in the case of NextEnergy I was not able to get an interview from the project manager of NextEnergy from the corporate side. Indeed, as explained above, in the moment I asked for an interview, Terna was involved in a change of the Board of Directors' members. Therefore, none in the corporate was neither available nor authorized to release any interview even if out from the BoD's members change topic. Therefore, instead of not considering this relevant corporate initiative from my analysis, I present the results of the interviews made with both the PoliHub representative and the founder of a start-up that participated to the acceleration phase of the programme. Besides the primary sources of information, I also present my personal thoughts about the programme as an insider since I directly supported the project manager of PoliHub in the management of NextEnergy and I saw how Terna behaved and supported start-ups during the programme.

When asked about the strengths that the corporate may exploit in order to support the incubator in providing a better service to start-ups participating to the programme, both Ms. Pingue and Mr. Nacci highlight the importance of the huge expertise and knowledge of both the technology and the market Terna has as a leader in the industry. Indeed, it is very important for start-ups participating to the acceleration programme having access to such an expertise and know-how since it surely speed-up the test and validation process of both the product developed and the customer segment targeted. Moreover, Terna may also provide easy access to its network of suppliers and partners in order to support concretely start-ups. Actually, during the last month of the acceleration programme, Terna contacted directly and privately each of the ten accelerated start-ups in order to start with them several collaborations. For instance, *"we are starting a collaboration with Terna in which they provide us with the opportunity to get access to their solar panel fields where we can install and test our products and once finalized the product we can support them in the optimization of the performances of the field"* (G. Nacci). Furthermore, as Ms. Pingue stated, *"Terna may complement us by providing start-ups with the financial support they need that unfortunately as an incubator we cannot provide. Moreover, its brand was very useful during the scouting phase for attracting a huge*

[49] Elytix is a start-up based in Bari that develops a platform that can be used as a primary tool for monitoring the facility performance and for understanding the reasons about a possible inefficiency with the expected data, in just one click. These data are calculated through a machine learning algorithm able to consider multiple factors including weather conditions, the construction data of the plant, nominal data of the control device, the seniority of the plant and the previous year's production refers to the same period.

number of start-ups and promising entrepreneurial projects" (C. Pingue). However, even if the incubator lacks investments capacity and market and technology specific knowledge, "*we can offer access to our academy network both to start-ups and to the corporate. We have several top-tier departments within which there are plenty of top researchers and experts. Consequently, we can offer a training on business and management topics that the corporate actually lacks. By meeting with professors and experts of MIP, our school of management, start-ups have the possibility to improve their business skills needed to build a competitive business model"* (C. Pingue). Furthermore, another element that the interviewees consider as a strength of PoliHub relates to the huge expertise cumulated in more than 15 years of experience in working with start-ups and supporting them in their growth phase. In fact, by considering the way Terna managed the scouting phase and the acceleration phase of NextEnergy, validates these incubator strengths. Indeed, both during the scouting phase and during the acceleration, Terna acted more as support for PoliHub than as manager of the initiative. For instance, during the scouting phase, Terna provided support in communicating the initiative letting PoliHub having the phase leadership. Moreover, during the acceleration phase, when start-ups were involved in getting the basic business and management elements PoliHub was in charge of organizing the activities and Terna provided the needed support. Of course, during the other phases of the initiatives Terna and PoliHub provided an equal service. These elements surely means that Terna had to rely on PoliHub for providing start-ups with services actually out from Terna core know-how.

Starting from these strengths and weaknesses, analysing the synergies between the parties involved in the collaboration was straightforward for the interviewees. Indeed, regarding the synergies, both C. Pingue and G. Nacci highlight the importance of the PoliHub's support to Terna in order to allow providing a better service to start-ups participating to the acceleration programme. Indeed, "*it is not just a matter of investments. We applied to the NextEnergy call for ideas with the aim of improving our business model and then start collaborations with Terna. Pursuing such objectives would not have been possible without the joint support of both Terna and PoliHub*" (G. Nacci). PoliHub has what Terna lacks and vice versa. Moreover, "*by communicating the start of a call for ideas backed by a corporate such as Terna eases the scouting of entrepreneurial projects/start-ups. Indeed, start-ups are more attracted and more willing to apply for participating to the initiative"* (C. Pingue). However, on the other side, besides synergies, there are also potential challenges that may arise from the collaboration. The main arisen during the

interviews are related to the huge difference lying between the corporate and both the incubator and start-ups. Indeed, as stated by Mr. Nacci, "*the huge diversity lying between us and Terna may represent a point of challenge. We speak different languages, we behave and work differently from a corporate. They lie on a complex internal structure and taking decisions or provide an answer may require too much time. On the other side, we are very flexible and sometimes we are not able to understand the way the corporate works*" (G. Nacci). Consequently, it is important for the incubator to act as intermediary between the parties thus facilitating the collaboration.

Finally, when asked about the main objectives underlying the collaboration with Terna, C. Pingue pointed out three main goals. First, providing start-ups with specific industry related knowledge and more partnership opportunity. "*The best way for providing such service is to collaborate with the key players of the specific industry"* (C. Pingue). As a direct consequence of starting partnerships with key industry actors, the incubator have the chance to get to know about the industry trends directly from the players. Finally, by collaborating with corporates, the incubator has to focus the scouting activities and services on particular topics related to the specific industries in which corporates operate. "*Indeed, PoliHub is not focused on a particular industry. Therefore, by collaborating with corporates, we can focalize our activities thus operating differently from how we usually do"* (C. Pingue). On the side of Terna, by analysing the way they behaved during the programme, it is clear that, on the one hand, they aimed at exploiting NextEnergy with an open innovation purpose. Indeed, they started many collaborations with the accelerated start-ups. On the other hand, the huge communication boost of the programme and the huge commitment of the top management of Terna, (for instance the intervention of the top management in front of the former Italian Prime Minister Matteo Renzi in which reminded the NextEnergy programme) express the goal of Terna in improving the brand reputation through the NextEnergy initiative.

Unlock Your Ability (ABB)

In order to analyse Unlock Your Ability, the call for Ideas organized by ABB in collaboration with PoliHub, I interviewed *Mr. Antonello Antoniazzi*, Corporate Executive Engineer at ABB, and *Mr. Marco Carvelli*, Head of Corporate Solution at PoliHub. Differently from the previous case, it was not possible to interview the founder of a start-up participating into the programme since it is just at the scouting phase of the first edition of the initiative. Therefore, I present just the results of two interviews.

When asked about the strengths of the corporate that could complement the weaknesses of the incubator involved in the collaboration, both Mr. Antoniazzi and Mr. Carvelli agreed in considering the possibility to provide start-ups with access to the network of ABB both the internal one, e.g. divisions that may support in different ways the start-ups both technically and economically, and the external one, e.g. access to the suppliers and customers network that may represent the first partners. Indeed, as stated by A. Antoniazzi, "*we can offer easy access to our laboratories, to our technicians that may support start-ups in defining their first prototypes/products. We can offer access to our plants in order to produce their pre-series products. This is why the acceleration phase of the initiative is located in our facilities. Furthermore, we can offer start-ups the possibility to meet our key partners and customers in order to have all the needed support in a very short time"* (A. Antoniazzi). Furthermore, another important element of strength is surely the presence of a division named ABB Technology Ventures (ATV) that is the strategic venture capital investment arm of ABB. "*It represents a huge opportunity for start-ups participating to this corporate initiative since, if attractive to the eyes of the corporate and well trained during the acceleration phase, start-ups may come up with a corporate venture capital investment"* (M. Carvelli).

After considering these strengths, both the interviewees agreed in highlighting how these elements are missing in an incubator that surely, as in the case of PoliHub, cannot provide neither such an investments opportunity nor access to such a market (supplier and customer) network. However, the incubator can rely on other strengths that "*for sure complement our weaknesses and these are the main reasons why we started a partnership with PoliHub"* (A. Antoniazzi). First, an incubator surely represent a point of attraction for innovative start-ups. Furthermore, those selected by the incubator are surely the most promising one since they pass through a tough process. Hence, they are the most appropriate to start a collaboration with a corporate especially after the training programme offered during the acceleration. Moreover, as stated by Mr. Antoniazzi, "*PoliHub can support us in finding the right ideas among the several start-ups available in the market. It can represent the intermediary player between us and the start-up environment"* (A. Antoniazzi). Finally, "*even if ABB may offer a huge technical support by providing access to its know-how and pool of technicians, PoliHub may rely and offer a diverse academic expertise represented by the pool of experts of the Politecnico di Milano"* (M. Carvelli).

From the analysis of such strengths of both parties, the interviewees pointed out the main synergies that may arise during the collaboration. First, "*ABB is now involved in a digital transformation. As a mechanical company, we are not so close to the digital start-up environment. If someone out there comes up with an innovative idea and seeks for the support of a corporate, it is very unlikely that they come to us. Who better than an incubator can supporting us in closing the gap with digital start-ups"* (A. Antoniazzi). Indeed, by acting as intermediary between the corporate and the start-ups, PoliHub may for sure support ABB in pursuing the digital transformation. On the other side, "*being backed by such an important corporate may facilitate the scouting phase. Indeed, it will be easier to attract those start-ups seeking for specific technical support, like the one offered by Unlock Your Ability"* (M. Carvelli). Finally, as stated by A. Antoniazzi "*we know that start-ups may be scared from collaborating with us afraid of us stealing their technologies. By collaborating with PoliHub, we are able to mitigate such a negative element"* (A. Antoniazzi).

On the other side, the interviewees also highlight some sources of challenges. In particular, A. Antoniazzi underline the importance of paying the proper attention to the corporate commitment during the acceleration. Indeed, *"if, for instance, during the acceleration programme a start-up asks for our direct support and we are not fully committed into the initiative thus we do not provide the right support to start-ups, we risk to lose all the potential positive impacts coming from the synergies"* (A.Antoniazzi). Moreover, both interviewees underline the differences lying between the corporate and start-ups. Indeed, the corporate is more structured and bureaucratic than start-ups, which are more flexible and able to adapt to the specific situation. Therefore, "*it is highly important to have an intermediate player (i.e. the incubator) able to mediate between the two parties in order to foster a good collaboration"* (A. Antoniazzi).

Finally, the interviewees highlight the objectives underlying the collaboration. On the corporate side, A. Antoniazzi points out four different objectives that ABB aims to pursue by collaborating with PoliHub and with innovative start-ups. First, as aforementioned, ABB is involved in a digital transformation. Therefore, the top management aims at fostering this transformation by collaborating with innovative start-ups. This main objective results in two sub-goals: (i) fostering innovation coming also from start-ups (open innovation objective) in addition to innovation from R&D labs; (ii) reduce the gap between ABB and both start-ups and competitors who already completed the digital transformation (brand reputation). Finally, a further objective arises from hosting

accelerated start-ups in the ABB facilities. Indeed, by working side-by-side with ABB's employees, it is very likely to foster the cross-fertilization effect, thus allowing both the start-up and the corporate to benefit from such a collaboration. On the PoliHub side, M. Carvelli highlights the importance of collaborating with corporates in the Italian environment. Indeed, "*since the Italian start-up environment lacks investments from both institutions and formal investors (like VCs), collaborating with corporates, which may complement such a lack, may become the only way available"* (M. Carvelli).

Conclusions, limitations and further developments

6.1 Discussion of the results

In this thesis, I provide an analysis of how corporates and incubators can collaborate in supporting innovative start-ups through corporate acceleration programmes. As a conclusion, I present below the final framework filled with the insights collected during the interviews and described in the previous chapter. Therefore, I compare them with the framework I created and I highlight the main differences or additional elements arisen from the interviews. Finally, in the last portion of this chapter, I discuss the limitations of my research and further developments that may improve the quality of my work.

<table>
<tr><th>CORPORATE</th><th>INCUBATOR</th></tr>
<tr><td>Strengths
High investment capacity.
Exposure to specific industry partners.
Exposure to specific internal and external industry knowledge.
Brand identity.
(*) Focus on actual market needs.
(*) Different typology of technology transfer process: starting from the market need.</td><td>Strengths
High expertise in supporting start-ups and acceleration programmes.
High expertise in acting like an intermediary between different parties.
(*) High expertise in pre-qualifying the deal flow of start-ups.
Exposure to academic network.
High flexibility in the internal structure.</td></tr>
<tr><td>Weaknesses
The weaknesses of the corporate are equal to the strengths of the incubator.</td><td>Weaknesses
The weaknesses of the incubator are equal to the strengths of the corporate</td></tr>
<tr><td colspan="2">Synergies
High investment capacity and the well recognized brand identity of the corporate attract more start-ups thus easing the scouting process.
(*) The access to academy network and the provision of educational elements allow to add robustness to start-up before approaching the corporate.
Mitigation of the impact of the corporate complex structure and inertia by adding some flexibility and by intermediating the collaboration.</td></tr>
</table>

Challenges	
High difference between the parties (both organizational and institutional distance among partners).	
(*) Importance of obtaining the right corporate commitment during the programme.	
Outcomes	
Attracting the attention of more investors in the specific industry.	Provide start-ups with more investment and collaboration opportunity.
(*) Add an industry focus to the incubator activities.	(*) Exploit the initiative with brand reputation purposes.
Exploit the initiatives with open innovation purposes.	(*) Exploit the initiative with cross-fertilization purposes.
Provide start-ups with specific industry-related knowledge.	Supporting start-ups during the growing stage.

Table 7. Overview of the results of the interviews

By comparing the elements within the table above with those described in the third chapter, it is possible to notice an alignment between the framework and the main results emerging from the interviews. However, interviewing the key players of the three calls, allowed me to add some elements not previously considered as relevant and, thus, ultimately, to expand my framework. The symbol (*) marks these new elements into the framework above. First, by speaking with incubator representatives I considered 3 additional strengths, two for the corporate and one for the incubator. Indeed, as also described in the previous chapter the corporate allows the incubator to focus on specific and real market needs highlighted exactly from who, day-by-day, operates in the market very often as a leader. Consequently, as Mainetti highlights, focusing the scouting process on specific market needs allows the incubator to turn the technology transfer process from push to pull. Indeed, instead of starting from the research results and then seek for potential interested players in the market (as the traditional technology transfer process proceed) , the new process is completely the opposite since it starts from the actual need of the market players and then there is the seeking of start-ups/entrepreneurial projects satisfying those needs. Finally, regarding the strengths, after the interview with S. Mainetti, I added as relevant element the high expertise of the incubator in pre-qualifying the deal flow of start-ups before presenting them to the corporate. Indeed, the most promising stat-ups that passed the selection process, have to pass also through a tough

acceleration process during which they are required to focus hardly on their offerings and in the meanwhile attending to lectures focused on basic elements of business and management. After this tough process, even if start-ups do not have finalized their offerings, they have surely the needed elements for collaborating with the corporate.
Another relevant element added within the framework relates to the challenges. In particular, during the interview with A. Antoniazzi from ABB, he told me about the importance of having the corporate staff well committed into the programme. Indeed, a low commitment may represent a source of risks that may reduce the positive impact of the acceleration programme.
Finally, the major differences between the framework and the results relates to the objectives behind the programmes. Indeed, there are four additional elements arisen from the interviews. If, on the one side, Novartis aims at pursuing through BioUpper the goal of attracting the attention of more investors in the Biotech and Healthcare industry, on the other side ABB aims at pursuing the improvement of the brand reputation and the exploitation of the cross-fertilization effect direct consequence of hosting start-ups in the ABB facilities. Finally, a peculiar objective resulted during the interview with C. Pingue from PoliHub. Indeed, she highlights the importance of such initiatives for the incubator not focused on specific industries since they allow focusing all the activities of the incubator o specific industries according to corporates.

6.2 Limitations and further developments

As any other, this work has several limitations, which open up avenues for further research. First, In order to illustrate the above framework, I analysed the PoliHub case and its collaborations with Novartis, Terna and ABB for running three different acceleration programmes. I welcome future work, which consider collaborations among other incubators and other corporates, to compare and contract my results.

Within this thesis, when analysing the corporate acceleration programmes powered by incubators, I just considered the PoliHub case study and three corporate call for ideas it manages (BioUpper, NextEnergy, Unlock Your Ability). However, a further step in order to provide a better analysis of this kind of corporate initiatives and in order to provide a more robust test of the proposed framework is to rely on an extended sample of incubators/private accelerators. Indeed, it may arise different typologies of corporate initiatives, or different ways of supporting corporates in developing acceleration programmes, and so on.

Second, the framework analyses just the collaboration between corporate and incubator. It does not consider the impact of such collaboration on the performances of accelerated start-ups. A further development may be done by monitoring the performance of accelerated start-ups and by matching them with those of start-ups that applied to the Call for Ideas but were not accepted for the acceleration programme.

Third, in the fifth chapter, while comparing the three different Call for Ideas, I highlight the different stage of maturity among the three corporate initiatives. In doing so, I just link the stage of maturity to the already run editions of the same initiative. However, it remains to be demonstrated whether a greater stage of maturity concretely depends on the number of editions of the corporate initiative thus increasing the impact of the corporate acceleration programme on accelerated start-ups. Therefore, in order to demonstrate the truthfulness of this assumption, it would be better to compare the performances of start-ups accelerated during different edition of the same corporate initiative.

So far, I just considered the impact of such collaboration on start-ups. A further step would be to consider also the consequences of such corporate initiatives on the parties organizing and managing the acceleration programme: the corporate and the incubator. Therefore, it may be preferable to consider specific KPIs aimed at tracking the performances of both the incubator and the corporate in order to understand whether such initiatives have an impact over the long run. Furthermore, by monitoring the results of these initiatives over the medium-long term, it is possible to verify whether the objectives declared by both the incubator and the corporate during the setup phase of the acceleration programme were pursued.

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