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The impact of high-tech startups ecosystems on economic systems development: the case of Israel

Supervisor

Ch. Prof. Vladi Finotto

Graduand

Beatrice Cogo

Matriculation Number 843517

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Abstract

This thesis work aims to discern the impact of high-tech startups and their ecosystems on the economic system's development: how the startup phenomenon is born and evolved during the years and the impact it has had in developing business networks and communities. In particular, we will analyze the role of accelerators and incubators together with the role of institutions such as universities and governments, in helping the emergence of young startups and in sustaining their growing period. Furthermore, we will see how startups ecosystems are able to boost economic growth and development of the country or region in which they are localized, accelerating competitiveness through the exchange of information, skills, hi-tech innovation and talents, bringing to a positive flow that is able to influence all the surrounding environment.

Finally, the specific case of Israel will be examined: the reasons that have brought to the success of "The Startup Nation", the characteristics of this country and, in particular, of the Tel Aviv area, the role played by the government and the differences with Italy and the rest of the world that contribute in making this country a unique case.

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INTRODUCTION

A confluence of factors has enabled the explosion of technology startups worldwide. The global spread of seed accelerators, incubators and hubs which foster high-tech ventures, is major component of this phenomenon. What appears to be important is delineating the role that the startups' phenomenon has in driving job-creation, innovation, economic growth and in creating healthy and sustainable communities boosting the economic development through innovation.

In order to enter in the specific of the thesis work, it is important to have an overview of the startups landscape, analyzing more specifically the recurring subjects related to it, with a special attention toward accelerators, incubators, angel investments and startups ecosystems, not before having presented an overview of startup's definition.

In fact, the first chapter will assess the facts that have brought to the creation of startups' ecosystem all around the world. Starting with a general explanation of what a startup is (also in comparison to other typologies of companies), what is the role played by startups in boosting technological transformation, emphasizing this strong relation that links startups and innovation. This section analyzes also the importance for startups of finding capitals, especially during their early stages, which are the many different ways of financing and how they change during the lifecycle phases. The chapter will then continue with an overview of the various development phases that usually characterize startups, concluding, finally, with an insight about startups ecosystems: what they are, the operators by which they are composed and the impact they have in the global economy.

Chapter two will be focused on the phenomenon of seed accelerators, starting with a general overview of the concept of accelerators, how they differentiate from other related concepts, such as incubators and business angels, and the success factors that get accelerators into the position of fundamental tools for what concerns startups emergence and sustainability. The chapter will then give an overview of the difficulties related to the collaboration between corporations and startups and an insight of the central role corporate accelerators are taking.

Chapter three will analyze the role of cities in becoming the new hubs for technological innovation. How centers of innovation are shifting from suburban areas toward urban areas, both in developed and developing countries. The chapter aims to give an overview of the role played by cities innovation hubs in job creation and economic development of the city in which they emerge and tries to explain why businesses tend to concentrate in and around cities. Finally, this chapter will try to discern the reasons why some cities' ecosystems seem to grow faster and better than others, also if they have the same size or even when having smaller sizes together with the importance of developing global connections.

Finally, in chapter four will be analyzed the specific case of Israel. How such a tiny and complex country has been able to become one of the leading startups' ecosystem in the world. In the attempt of answering this question, an overview of the historical important facts that have shaped this country will be given, by granting a particular mixture of elements which have been found to be essential in developing the innovative mindset that characterize this population and that makes this country the perfect place for startups to emerge and develop.

The specific case of the city of Tel Aviv will be take into consideration examining the startup ecosystem of this city and how it is classified in comparison to other global cities located both in developed and developing countries, with an insight and interview about a new reality created by four leading international banks as a hub of collaboration with Israeli FinTech startups. This section and, in particular, The Floor's case, is the result of a three-months period spent in Tel Aviv at the end of 2017 which was fundamental for the preparation of this thesis work, the understanding of the subject and for the development of a more complete personal opinion.

Finally, this thesis will try to understand which are the lessons other countries can learn from the Israeli case, how they can adapt this successful model within their home countries in the attempt of boosting their high-tech sector with the aim of developing a sustainable startup ecosystem capable of stimulate both economic growth and job creation.

CH. 1 – STARTUPS OVERVIEW

A startup is a “young, newly emerged company which is characterized by a high rate of innovation and a fast-growing business that aims to meet a marketplace’s need by developing a valuable business model around an innovative product, service, process or a platform”¹.

Not without a reason, at first, startups were considered only those highly technologic operating on web or in the digital sector. Only in a second moment the term startup has been extended also to innovative companies operating in the manufacturing field.

Startups constitute an important instrument by which new ideas are brought into life, especially those ideas that require an alternative response to the already established companies in the industries. They are at the heart of the process of *creative destruction* and essential for increasing employment. They boost the competitive pressure on predominant businesses, driving to improvements in both productivity and prosperity². Summarizing, the start and scale of new ventures results to be vital for innovation and economic growth.

Despite the huge impact that startups have in exploiting and developing new technology, the most important reason for emerging, high-growth companies’ popularity is the enormous role they play in economic growth and especially in job creation. In fact, according to an estimate of *Kauffman Foundation (2015)*³ about American economy, young firms (younger than five years) are those with the highest job-creating power. New and young companies are indeed the primary source of job creation in the American economy, they create an average of three million new jobs per year and have been responsible for almost all the new job creation in the United States in the last forty years. Furthermore, those kinds of firms contribute to economic dynamism by injecting competition into markets and spurring innovation. Many young firms show in fact an “up

¹Robehmed, N. (2016), “What is a startup?”, *Forbes*

² Dee, N., Gill, D., Weinberg, C., McTavish, S. (2015), “What’s the difference?”, *NESTA*

³ Marion, E. (2015), “The economic impact of young firms for economic growth”, *Kauffman Foundation*

or out” dynamic, in which innovative and successful firms grow rapidly and become source of job and economic growth, or quickly fail and exit the market, allowing capital to be put to more productive uses.

Startups can be of every sort and size, but they are usually quite small at the beginning and initially financed and operated by a handful of founders or just one individual. Nevertheless, it is important to recognize that startups are not smaller versions of large companies and companies are not larger versions of startups. This is clear following the definition of startup provided by *Steve Blank (Blank 2010)*⁴, a serial entrepreneur of the Silicon Valley and author of the bestseller book “*The Startup Owner’s Manual*”, who defined startups as “temporary, scalable and repeatable companies”.

In fact, startups’ business models are usually developed to be *scalable and repeatable*, where “scalable” means a business model which can grow its dimensions (its clients and turnover) in an exponential way, without the necessity of investing a proportionate amount of resources to succeed. In other words, a startup for being such needs to be able to exploit economies of scale.

With the term “replicable”, on the other hand, we mean a business model that can be replicated in different places and different periods of time without being completely revolutionized but just applying little changes.

Following the literature together with Blank’s definition, the general characteristics that a startup needs to have to be considered as such are:

- *The temporary nature*: the startup needs to be a temporary phase. Its ambition is to become a big company;
- *The experimentation*: the startup does not know exactly what is doing, it needs to make some attempts before founding the right formula;
- *The scalable and repeatable business model*: exploit economies of scale with the aim of growing exponentially.

⁴ Blank, S. (2010), “What’s a startup? First principles”, Steveblank.com, <https://steveblank.com/2010/01/25/whats-a-startup-first-principles/>

His definition, that says that “a startup is a company, a partnership or temporary organization designed to search for a repeatable and scalable business model”, results also to be essential but exhaustive because it encompasses all the characteristics necessary to distinguish the authentic startup from companies of other kind and it is opposed to the definition of companies which are “permanent organizations designed to execute a repeatable and scalable business model”.

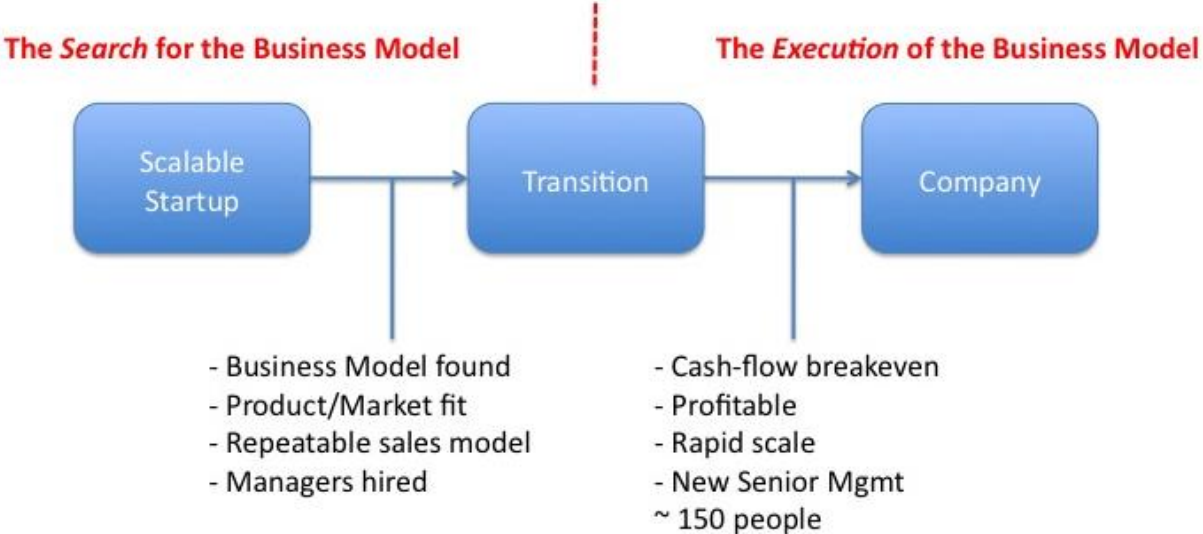


Figure 1: Steveblank.com (2010)

This difference between “search” and “execute” is indeed essential in the understanding of the startup model.

Following Blank, we now know that startups are not smaller version of large companies, there are some key differences between what you do in a large company and what you do in a startup: what we do in sales in a large company is very different from how we approach sales in a startup, how we think about accounting in a company is very different from metrics in a startup and the same thing can be said for all the other company’s activities such as products management opposed to startup’s customer development or large companies’ business plans versus startups’ business models and so on.

- *Business plan vs business model:* in a large company it is known who the customers are, the channels are known, and the prices are known, a lot of information are available and it is very simple to develop a business plan. But in a startup, it is completely different, they do not understand their customers, because they do not

have any yet, they do not understand prices, all these are guesses and for this reason putting together a plan would be complicated. So, in startups it is more usual to use business models to test hypothesis rather than business plans where we go to execution.

- *Accounting, engineering and sales*: there are a lot of information and literature about all these tools and strategies on execution, but there is no language and no tools for search. What results from research is that in startup companies “normal” activities such as accounting, result to be useless while they need to develop their own methodologies and tools.

Blank continued his research on “search versus execution” analyzing the different areas in which existing business units and startups mainly differ between each other:⁵

Strategy



Figure 2: Steveblank.com (2012)

During the strategy phase, the startup needs to validate the hypotheses made in the business model before moving into execution mode where financial forecasts and other well-known management tools will be needed.

⁵ Blank, S. (2012). “Search versus execute”. Steveblank.com: <https://steveblank.com/2012/03/05/search-versus-execute/>

Process

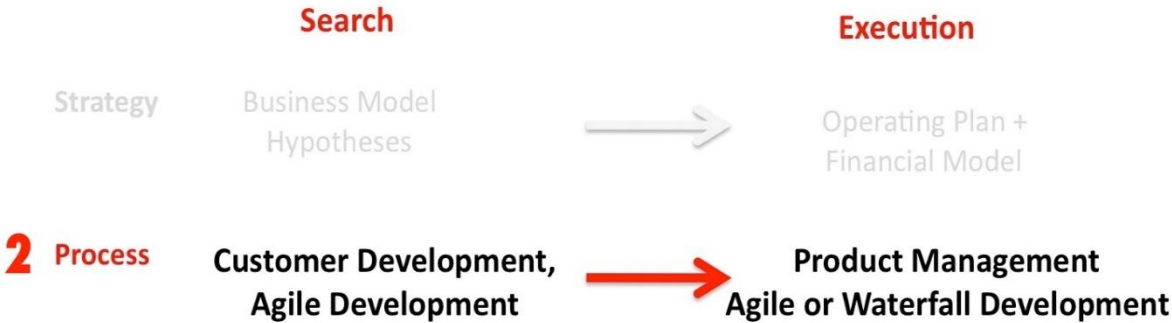


Figure 3: Steveblank.com (2012)

The process differs a lot between startups and established business units. In fact, processes used in startups need to be more dynamic because of the difficulties of working with a volatile business model. During the model’s development, the startup runs several experiments to test it, and from the responses derived from those experiments, the startup will then change its model. For this reason, failure is part of the game in search. Differently from existing companies which punish failures even with layoffs.

Organization

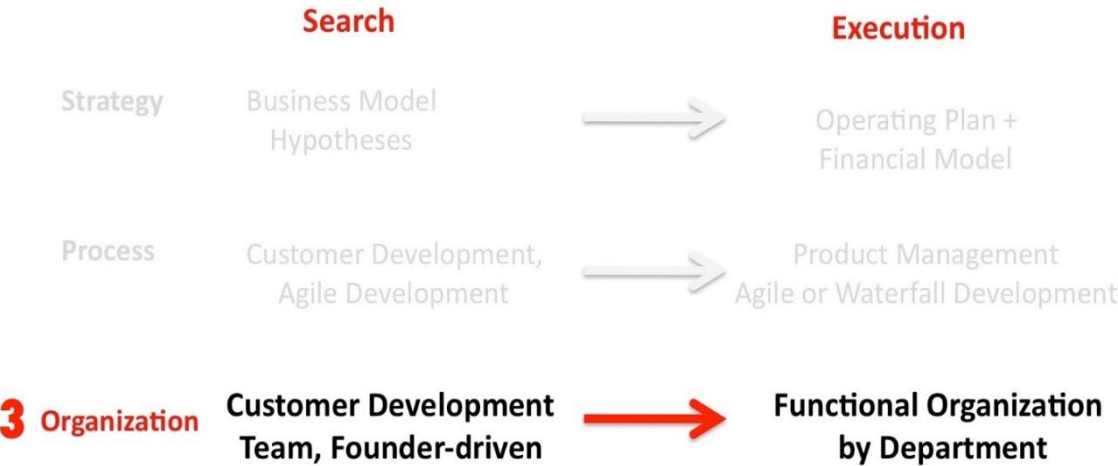


Figure 4: Steveblank.com (2012)

Following Blank argument, the nature of startups which are companies that search for a scalable and repeatable business process, requires also a different organization that the

one used in execution of a given plan. While execution requires the company’s structure to be organized by functions such as product management, sales, marketing and business development, searching feels necessity for the company to be organized around customer development which allows startups to be more curious and adopt a “learning and discovery” culture opposed to the static approach of execution.

Education

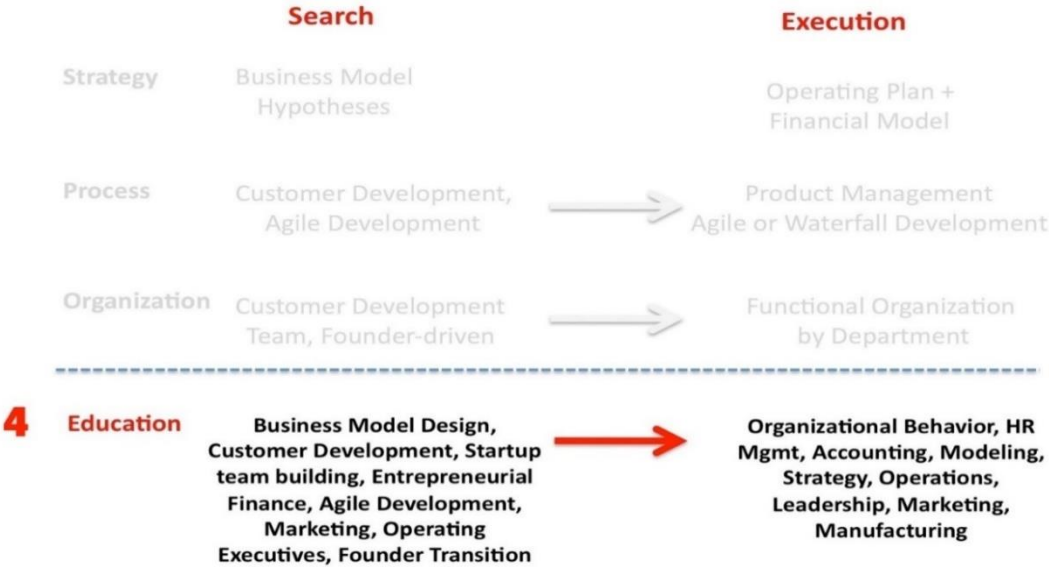


Figure 5: Steveblank.com (2012)

Education is another important area in entrepreneurship field. Education struggle to keep up with the reality and in preparing students able to deal with building new ventures, which is the reason why new management schools have started emerging around a “search and discovery” methodology that aims to provide the startup equivalent of the management tools MBAs learn for execution. Those new education methodologies involve also new kinds of class experience, from a case method to hands-on experience and learning-by-doing.

Instructional strategy

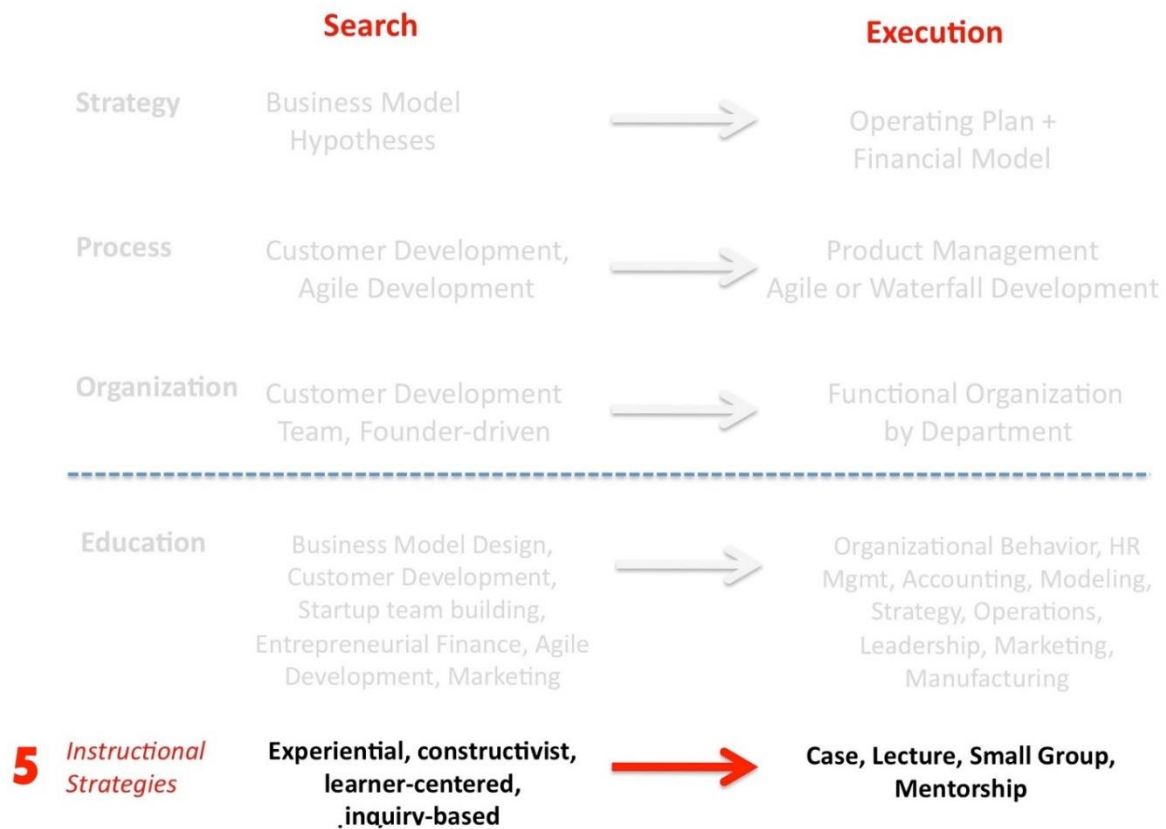


Figure 6: Steveblank.com (2012)

According to Blank, entrepreneurs need to be aware of the fact that all their assumptions made in the business model will undoubtedly change by what they will learn from customers. The startup world is, in fact, too chaotic to be analyzed in a given case study in classroom that could not be replicated in a startup which is, for its nature, complex and chaotic.

It is for this reason that Blank suggests business model design (using business model canvas) as better ways to:

- 1) capture and visualize the evolution of business learning in a company;
- 2) see what patterns *match* real world iterations and pivots.

In Blank’s opinion, this tool of business model canvas appears to match the real-world search for business model.

So, hands-on material appears to work better in the attempt of training entrepreneurship education, allowing students to make mistakes and learning from them.

In conclusion, an emphasis on experimental, learner-centric and inquiry-based classes seems to help in developing an entrepreneurial mindset able to better fit with the actual startup business environment.

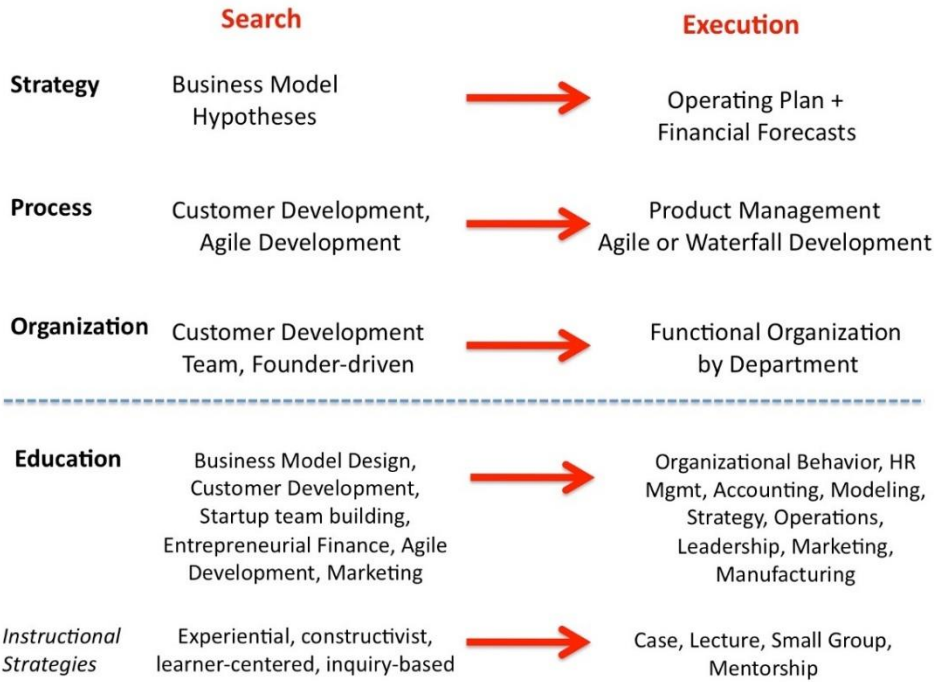


Figure 7: Steveblank.com (2012)

1.1 – Startups and innovation

Innovation is a central concept when talking about startups which, for their very own nature, are innovative way of doing business.

Being a startup coincides with having an innovative attitude. Indeed, for describing this new approach of doing business we usually talk about “*Technovation*” that merges the words technology and innovation.

During the last few decades, one of the main reasons for the gap in market productivity between developed and developing countries is due to a weakness in technological innovation. In fact, technological innovation, which means developing new ideas, products, services and processes which exploit technology, plays a central role in economic growth. Nonetheless, Technovation is able to create valuable products and services no one has yet asked for or creates “disruptive” change.

Startups, by their nature, are the best form of venture for exploiting both technology and innovation and science parks, incubators and accelerators are technology business incubation (TBI) mechanisms which represent important policy tools for supporting innovation and technology-oriented entrepreneurial growth. *Smilor and Gill (1986)*⁶ first articulated the concept of TBIs as offering a link between technology, know-how, entrepreneurial talent and capital. Those initiatives are able to support ventures with business services, networking, resources and capital with the intent to help startups in their attempt to survive, scale up and grow.

The evolution of TBI’s programs during the years can be divided into three main waves⁷:

1. *The first wave (until 1980)*: when incubation programs aimed at economic restructuring and job creation, providing affordable spaces and shared services;
2. *The second wave (1980s-1990s)*: when incubation programs offered a more complete menu of value-adding services, including counselling, skills enhancement and networking;

⁶ Smilor, R.W., Gill, M.D. (1986), *The New Business Incubator. Linking Talent, Technology, Capital, and Know-How*, Lexington Books, Massachusetts, Toronto

⁷ Mian, S., Lamine, W., Fayolle, A. (2016), “*Technology business incubation: an overview of the state of knowledge*”, *Technovation*

3. *The third wave (1990s-today)*: when incubation programs have seen the rise of a new form of TBI mechanism: the accelerator. Accelerators programs, as we define them, appear to be addressing a growing opportunity in the market for innovation.

The connection between startups and innovation goes further, in fact, due to their smallness, startups suffer a structural lack of tangible and intangible resources. For this reason, utilization of *Open Innovation (OI)* becomes necessary for this kind of companies. Indeed, startup phenomenon and open innovation appear to be closely related phenomena.

The term “Open Innovation” was originally defined as “*a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology*”⁸. A more recent definition acknowledges that a more permeable situation between the firm and the environment exists, and that innovation can be easily transferred inward and outward between firms and other firms, creative customers and communities of user innovators.

In fact, in a world where knowledge is highly distributed it is quite unlikely for companies to rely entirely on their own, instead they should integrate them with external sources of innovative opportunities.

Obviously, there are a lot of *advantages* related to operate with open innovation⁹:

- Reduced costs of conducting R&D;
- Potential for improvement in development productivity;
- Incorporation of customer early in the development process;
- Increase in accuracy for market research and customer targeting;
- Potential for synergism between internal and external innovation;
- Potential for viral marketing.

⁸ Chesbrough, H. W. (2003), “Open innovation: the new imperative for creating and profiting from technology”, Harvard Business School Press

⁹ Corne, S., Marais, S. (2010), “The development of open innovation models to assist the innovation process”, University of Stellenbosch, South Africa

But of course, there are also some *disadvantages* related to the adoption of open innovation, among them:

- Possibility of revealing information not intended for sharing;
- Potential for the hosting organization to lose their competitive advantage as a consequence of revealing intellectual property;
- Increased complexity of controlling innovation and regulating how contributors affect a project;
- Devising a means to properly identify and incorporate external innovation;
- Realigning innovation strategies to extend beyond the firm in order to maximize the return from external innovation.

1.2 – Startups financing cycle

Following the “Californian” method (of the Silicon Valley), a startup can be fast-growing and scale only if it is able to obtain immediately huge capitals. To obtain capitals a startup needs to use third parties’ resources such as business angels’ and venture capitals’ ones, which accept to share the risk in exchange to companies shares.

In fact, running a startup is associated with high risk and often requires more funding than the founders can provide themselves. Therefore, they need to connect with investors that can provide them with capital.

In the early stages, startup companies' expenses tend to exceed their revenues as they work on developing, testing and marketing their idea. As such, they often require high financing. Startups may be funded in several different ways, among them the most utilized are: incubators, business angels, venture capitals and accelerators, which we will analyze more in details in the next chapter.

Because of the high-risky nature of startups, it can be hard to attract investors. Investors, in fact, aim to companies with specific characteristics such as: strong co-founding team (all the people involved in the launch of a startup, usually entrepreneurs, engineers, hackers, web developers, web designers and so on), balanced risk/reward profile and scalability.

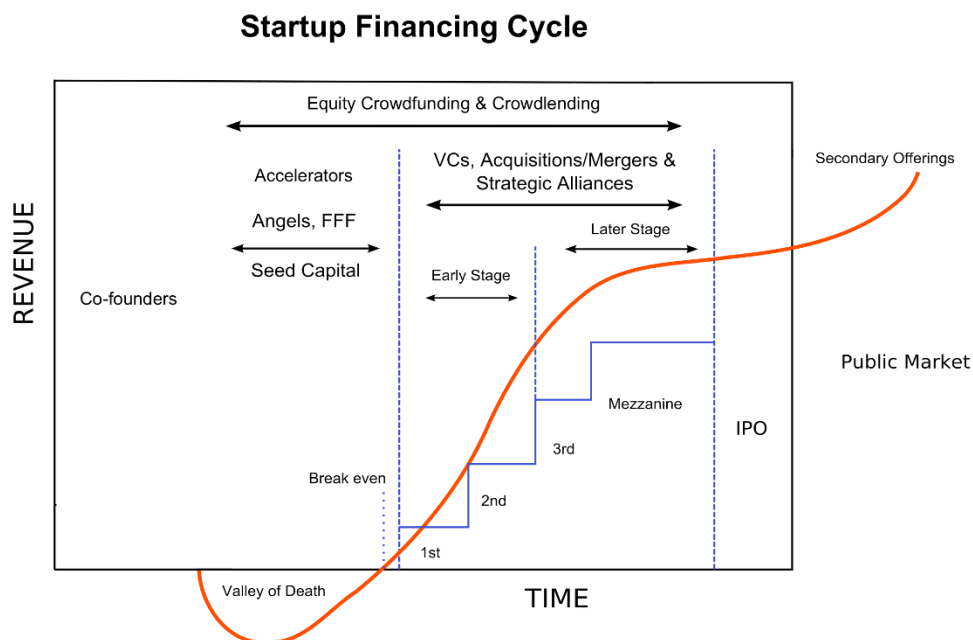


Figure 8: Commons.wikimedia.org (2009)

The diagram above represents the “typical financing cycle”¹⁰ for a startup company where, in each stage, investors can participate:

- *Seed Stage*: is the very early phase in which startups’ product or service is still a prototype and it is more usual that angel investors would be the ones participating at this level, nevertheless in the last decade also accelerators have become an important investor method at this level.
- *Early Stage*: in this phase startup starts getting traction and may be making revenues. Development of the product, infrastructure and team proceed and late in this stage the company begins its growth effort. Venture capitalists participate in this phase alongside angel investors;
- *Growth stage*: company endeavours to grow its sales. In this phase, company is usually financed by angel groups, super angels alongside with venture capitalists;
- *Mezzanine stage*: venture attempts to scale its sales. In this phase venture is typically financed by venture capitalists;
- *Exit stage*: this phase is the one leading towards the IPO (initial public offering) or to sale to a strategic player. Venture capital firms and private equity firms will participate in funding.

Investing online

Another form of investment recently emerged is the online investment, the first known example of investment-based crowdfunding platform for startups was launched in 2010 by Grow VC¹¹ followed by the first US based company ProFounder launching model for startups to raise investments directly on the site¹². After that, numerous crowdfunding platforms started to emerge like Seedrs in Europe or OurCrowd in Israel. These platforms aim to solve two important problems related to financing startups: the first is

¹⁰ FundingSage, “Startup funding rounds: the funding life cycle”, last visit 23 April 2018

¹¹ TechCrunch (2010) “Grow VC launches, aiming to become the Kiva for tech startups”, <https://techcrunch.com/2010/02/15/grow-vc-launches-aiming-to-become-the-kiva-for-tech-startups/>

¹² TechCrunch (2011), “Crowdsourced fundraising platform ProFounder now offers equity-based investment tools”, <https://techcrunch.com/2011/05/03/crowdsourced-fundraising-platform-profounder-now-offers-equity-based-investment-tools/>

the access to capital and decrease the time needed to close a round of financing and the second is increase the amount of deal flow for the investor and centralize the process¹³.

1.3 – Startups development phases

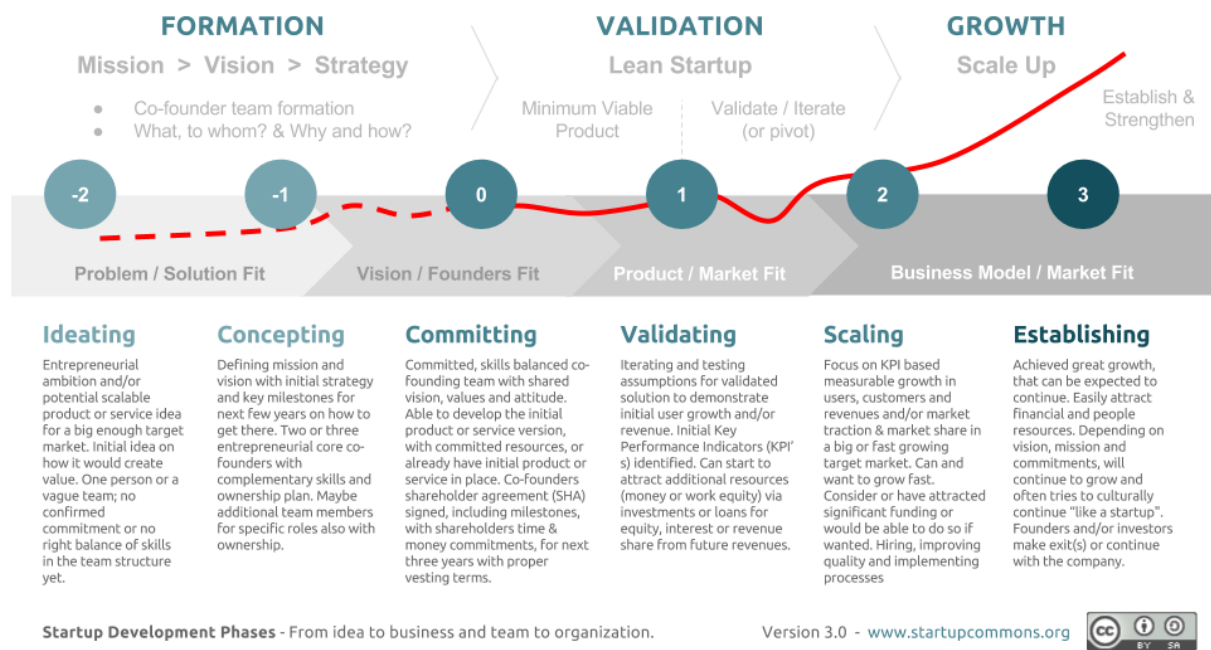


Figure 9: Startupcommons.org (2016)

Despite the diversities that startups have from one another, we can identify six main development phases that each startup needs to pass before the eventual establishment. This framework, elaborated by *Startup Commons (2016)*¹⁴, shows us the six development phases of startups (ideating, concepting, committing, validating, scaling and establishment), which can be further grouped into three main areas:

- *Formation*: is about inspiring and attracting new talents along with providing access to entrepreneurial education, ideas and knowledge with the aim of building the right mindset. In this phase the ideation of the entrepreneurial ambition takes

¹³ UpStart Business Journal (2013), "Shout it out: new rules allow startups to advertise fundraising"

¹⁴ Global non-profit initiative for developing startup ecosystem technology, share knowledge and open data, <http://www.startupcommons.org/what-is-startup-ecosystem.html>

place, so the mission (product or service for a certain market) is established with an initial strategy that can be changed later;

- *Validation*: is the phase in which the support focus shift to initial product development, strengthening core team via mentoring or new team members, supporting team and product validation and customer development;
- *Growth*: in this phase starts the scaling of the startup. The focus becomes more about additional resourcing, creating processes to scale various business operations, improving financials and helping in expanding business internationally. Startups are now able to attract (or have already attracted) significant funding. They are also able to enhance quality. Once great growth is achieved, startups enter in the establishment phase in which they can continue growing or consider selling the startup to a significant player.

Furthermore, if startups want to be successful they need to have a combination of factors that seem to be essential for the success of these new ventures. In fact, they should be able to find the right merger between a high growth ambition and team commitment along with a great market opportunity and a good market entering time, all mixed with a high scalability potential and a balanced skilled team structure.

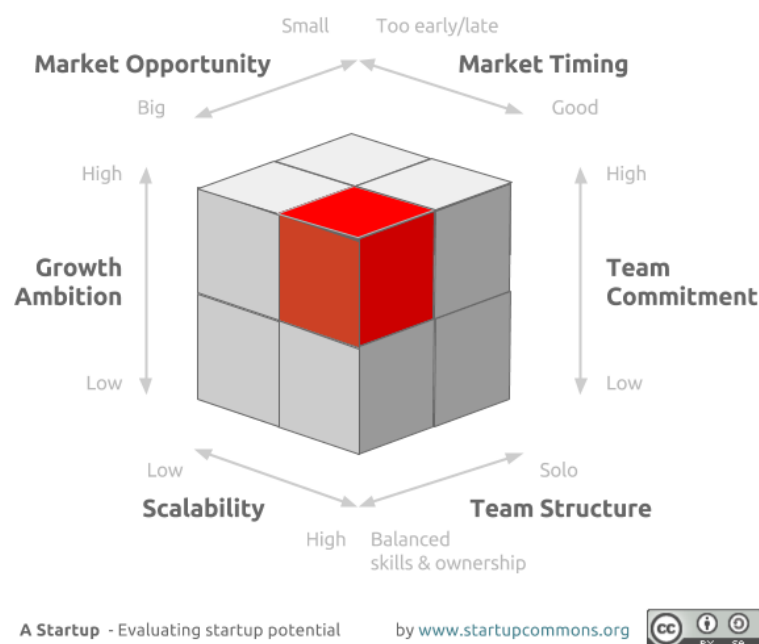


Figure 10: Startupcommons.org (2018)

1.4 – Startups ecosystems

What plays a central role in the emergence of high-tech startups all over the world is the business ecosystem. The high growth of startups' ecosystems worldwide has had a tremendous impact on the global economy. The characteristics of the startup ecosystem in which startups are launched can have a huge impact on the volume and success of startups themselves. The designation "startup ecosystems" find its roots on the comparison *Beer (1964)* made between business systems to biological systems, emphasizing that industrial organizations appear to be organisms that respond to the business environment in which they are collocated. Later, *Moore (1996)* defined business ecosystems as "*economic communities supported by a foundation of interacting organizations and individuals which constitute the organisms of the business world*". This definition aims to highlight the mutual relationship between companies and the surrounding business environment.

Business ecosystems can be formed by a vast number of different players which, as a whole, contribute to the business ecosystem growth. Among them we can find:

- *Individuals*, such as entrepreneurs, venture capitalists, angel investors and mentors;
- *Institutions and organizations*, such as universities, business schools and governments;
- *Business incubators, hubs and accelerators*.

A startup ecosystem is formed by entrepreneurial talents, business creators and businesses at various development phases, combined with various types of public, private and NGO's support provider organizations, typically located within a city region, interacting as an organic system to create new businesses and innovative companies. Different support providers focus on different parts of the ecosystem, business vertical and/or businesses at their specific development phases.

Core purpose of ecosystems is to produce and attract entrepreneurial talents and new ideas in growing volume, to build growing businesses.

The main services ecosystems should focus on are:

1. Support ideation to create new potential innovations in technology, business models and processes, and to develop these to actual growing businesses;
2. To support the team formation and further development for actual effective organization.

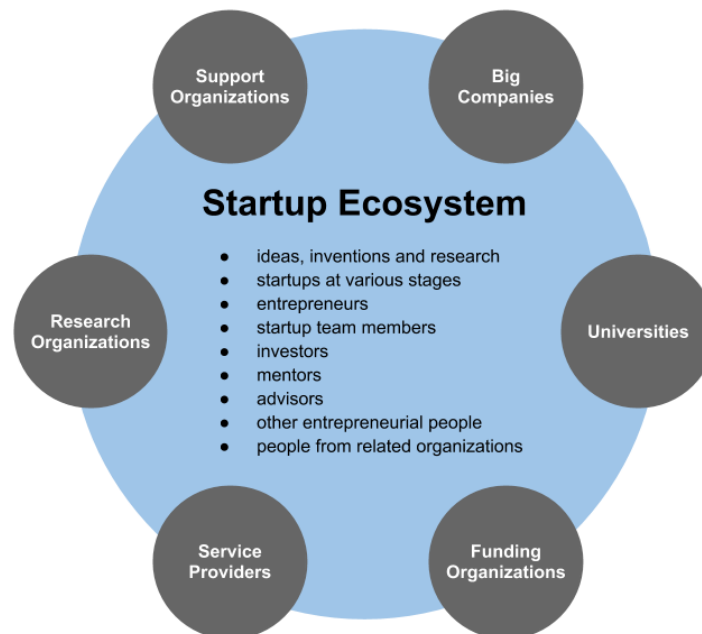


Figure 11: Startupcommons.org (2013)

If a region presents all these elements is considered a “strong” startup ecosystem, among the most famous we find: the Silicon Valley in California and the Silicon Wadi in Tel Aviv.

1.4.1 - Startup ecosystems lifecycle phases

Following the *Start-up Genome Report (2017)*¹⁵, start-up ecosystems usually pass four phases during their lifecycle, which differentiate them in terms of size, strengths and challenges:

1. Activation

Characterized by low number of start-ups, limited local experience and lack of resources. The main objective of this phase is growing and try to build a bigger and more connected community;

2. Globalization

The ecosystem has become larger and is now placed on the map. The main objective in this phase consists in foster connections with other global ecosystems;

3. Expansion

The ecosystem is now elevated to the global stage and make the world its pool of resources. The main objective of this phase is trying to expand further, fill the remaining resourcing gaps and increase the global connectedness;

4. Integration

The ecosystem is now competitive and balanced with the other top global ecosystems. The main objective of this phase consists in integrating the ecosystem with the global, national and local flow of resources and making it more competitive.

Size

The size of a startup ecosystem includes the output (the number of startups generated within the ecosystem), the density (the number of thousand startups per million people), the growth of other resources such as talents and capital; the main driver of startup ecosystem growth is given by resource attraction.

¹⁵ Annual report developed by Startup Genome project <https://startupgenome.com/>

Startup experience

In order to develop and grow, both in size and performance, a startup ecosystem needs to develop experience. The know-how accumulated within a certain ecosystem and the rate of its growth changes a lot from one ecosystem to another.

Resources and resource attraction

Ecosystems grow rapidly and better in cities and regions where there is abundance of experience and resources.

Entrepreneurs, startups and investors are attracted by those ecosystems that are able to offer the best mix of resources considered important.

Resource attraction varies a lot among the different lifecycle phases as showed in figure 12. At the beginning ecosystem resources grow at a slow rate, they start being positive during the globalization phase where the national resource attraction starts and finally, in the expansion phase, the world become the source of resources.

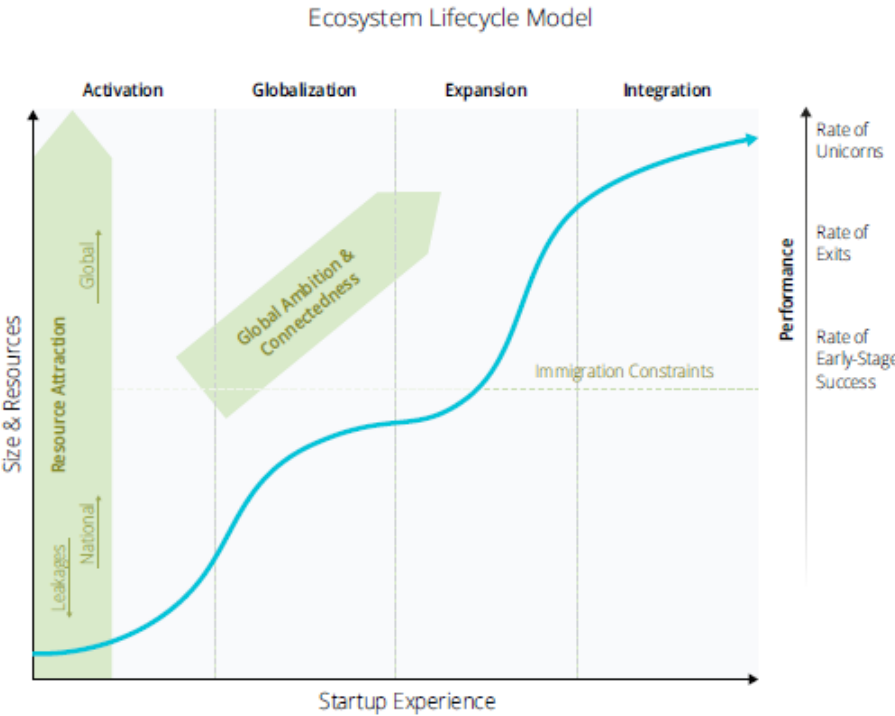


Figure 12: Startup Genome (2017)

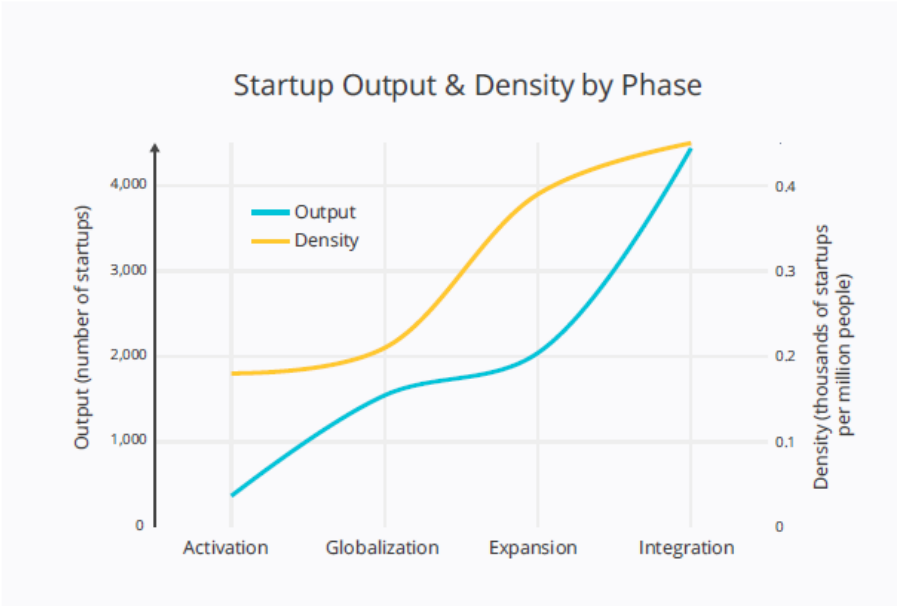


Figure 13: Startup Genome (2017)

1.4.2 – Startup ecosystems conclusions

Many of the startups in business ecosystems are created by well-established companies which exploit startups to test the water and scrutinize innovative opportunities within the ecosystem.

The literature has found that entrepreneurial ecosystems differ between each other in a fundamental property: the ability to adapt and change in response to disturbances: the resilience (*Meerow and Newell, 2015*)¹⁶. Those disturbances can be provoked by many factors, like shifting in internal or external conditions. So, an ecosystem to be “resilient” needs to be able to resist those disturbances and transform itself with the aim of responding to disruptions and survive becoming even stronger.

Startups’ ecosystems are controlled by both external and internal factors, where external factors can be the financial climate, big market disruptions and big companies’ transitions. Startups’ ecosystems in similar environment but located in different parts of the world can end up doing things differently simply because they have different entrepreneurial cultures and resources pools, furthermore the introduction of non-native people knowledge and skills can also cause substantial shifts in the ecosystem functions.

Internal factors not only control ecosystem processes but are also controlled by them and are often subject to feedback loops. While some of the resources are generally controlled by external processes like financial climate or market disruptions, the availability of resources within the ecosystem is controlled by internal factors like people and organizations’ ability to contribute towards ecosystem. Other internal factors include startups success and failures succession along with types of people and available skills. Although people exist and operate within ecosystems, their cumulative effects are large enough to influence external factors like financial climate.

Startups’ ecosystems provide a variety of goods and services upon which other people and companies depend on and thus, the principle of startups ecosystems’ management

¹⁶ Meerow, S., Newell, J.P., Stults, M. (2016), “Defining urban resilience: a review”, University of Michigan

suggest that rather than managing individual people or organizations, resources should be managed at the level of the startups' ecosystem itself.

When management is applied to the whole start-up ecosystem, rather than just single start-ups or organizations, it is termed *startup ecosystem management*. Startup ecosystem management is driven by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on our best understanding of the interactions and processes necessary to sustain ecosystem structures and functions. Thus, the purpose of it is to manage areas at various scales in such a way that ecosystem services and resources are preserved while appropriate resource use and options for livelihood are sustained.

Success of the ecosystem is measured by the volume and quality of great companies growing from the ecosystem, so the growth of local ecosystem is dependent from new people entering, exiting, navigating and starting to actively take part in it.

CH. 2 – THE SEED ACCELERATORS PHENOMENON

2.1 Seed accelerators overview

As we have seen in the previous chapter about the startups' phenomenon, entrepreneurship is able to drive job-creation, innovation, economic growth and creating healthy and sustainable communities boosting innovative behaviors, resource combination and competitive pressure.

Since starting a new venture is difficult, expensive and it generally involves high rates of failure, a number of systems have been elaborated to provide the right amount of support to entrepreneurs during the first crucial phases, which can help in mitigating the rate of failures and developing the business, among them we can include: *science parks, incubators, small business centers, angel investors and accelerators*.¹⁷

According to the literature, “science parks and business incubators are property-based organizations with identifiable administrative centers focused on the mission of business acceleration through knowledge agglomeration and resource sharing”. Incubators in particular, are designed to be laboratories that encourage innovation through the use of technology and to use entrepreneurial spirit to spur new ventures creation and growth. In contrast, a small business center is a non-resident source of expertise open to all members of a community typically founded by local governments.

Finally, *startup or seed accelerators*, represent a relatively new phenomenon which has seen an impressive growth and gained huge importance in the business environment.

Accelerators are programs able to provide young companies with mentorship, office spaces and small investments in exchange for equity, helping them in building a powerful network in the early stages of the firm's development. Furthermore, being affiliated with top accelerator programs can provide a strong brand image and legitimate young companies in seeking resources from outside sources.

¹⁷ Wise, S., Valliere, D. (2014), “The impact on management experience on the performance of startups within accelerators”, *The Journal of Private Equity*, <http://jpe.ijournals.com/content/18/1/9>

Accelerator programs have been proliferating all around the world and many local governments have adopted them with the hope of transforming their local economies through the establishment of high-tech startups' clusters.

This rapidly growing phenomenon can be said to be born in 2005 with the *Y Combinator*, considered to be the first accelerator program, founded by *Paul Graham* in Cambridge, Massachusetts, later moved to Silicon Valley. Y Combinator was promptly followed by *TechStars*, established in 2007 by *David Cohen and Brad Feld* in Boulder, Colorado with the idea of transforming its startup ecosystem through the accelerator model.

After those first examples, a vast number of other accelerator programs have grown based on the model of these two and today, estimates of the number of accelerators range from +300 to +3000 spanning six continents, and the number is growing rapidly¹⁸.

The emergence and proliferation of accelerators, especially during the last decade, has been facilitated by the significant fall in the costs of experimentation and in the costs necessary to seed a startup software company. Ten years ago, building a software company may have cost, on average, \$5 million while today it can be accomplished with \$500 thousand and startups that needed from \$500 thousand to \$1 million to be accomplished ten years ago, now need just \$50 thousand seed investment.

Startup or seed accelerators are the most recent institutional tool in entrepreneurial ecosystem. Since this is a fairly new phenomenon, there is little and often discordant literature about it.

The most formal definition of seed accelerator was first offered first by *Cohen (2013)*¹⁹ and then by *Cohen and Hochberg (2014)*²⁰ who defined it as a "*fixed-term, cohort-based programs that allow startups to benefit from seed investments, connections, mentorships,*

¹⁸ Hochberg, Y.V. (2015), "Accelerating entrepreneurs and ecosystems: the seed accelerator model", Rice University, MIT & NBER

¹⁹ Cohen, S. (2013), "What do accelerators do? Insight from Incubators and Angels", *Innovations: Technology, Governance, Globalization*, vol. 8, num. 3/4, pag. 19-25

²⁰ Cohen, S., Hochberg, Y.V: (2014), "Accelerating Startups: The Seed Accelerator Phenomenon", Rice University, MIT & NBER

educational components and culminate in a public pitch event or “Demo Day” during which the graduating cohort of startups pitch their businesses to a large group of potential investors”.

In practice, accelerator programs combine distinct services and functions that are difficult and costly for the entrepreneur to find and obtain by him/herself.

In general terms, accelerators are programs intended for the development of a venture with the aim of making it self-reliant.

Following the definition, we can identify three main elements that underlie the value added of business accelerators²¹:

- *Mentorship*, the availability of qualified and experienced mentors;
- *Connectivity*, to a powerful network of operators;
- *Brand enhancement* and signaling of *legitimacy*, obtained from program’s participation.

There are several advantages connected to the decision of participating into an accelerator program.

Obviously, startups’ founders receive a lot of benefits from this participation, like the possibility of being part of a solid community, surrounded by highly qualified mentors, sharing the costs associated to spaces and basic tools, but the advantages go beyond that, affecting all the technology community. In fact, the accelerator program has the effect of discovering new talents, filter the sector to only the more qualified people and provide a set of information that allow investors to focus their efforts and concentrate their resources on the most valuable business realities.

Furthermore, the large number of companies that apply to accelerator programs is able to give proper insights about the future trends in technology.

²¹ Wise, S., Valliere, D. (2014), “The impact on management experience on the performance of start-ups within accelerators”, The Journal of Private Equity

Finally, accelerators are recognized for their ability to facilitate the development and assessment of entrepreneurial competencies in nascent ventures through their ability of recognizing activities that are critical entrepreneurial competencies, creating a realistic learning experience that works as a “new business school” for entrepreneurs.

In fact, entrepreneurship is an opportunity-seeking and action-based behavior that requires various competencies, among them, the abilities to create and innovate products, services, processes, strategies and organizations²².

Given that all accelerators have the purpose of building entrepreneurial competencies, they can do this in many different ways, among them:

- thanks to their limited timeframe, those programs force the teams into a high-pressure situation, a realistic context faced by entrepreneurs, which accelerate learning during the program period;
- by the peer-to-peer and mentor-based learning experience.

The outcome that can result from an accelerator experience may have three different conclusions:

- Nascent entrepreneurs confidently pursue the startup;
- Nascent entrepreneurs perceive the need to develop deeper entrepreneurial competencies but continue the startup;
- Nascent entrepreneurs realize that the startup is not a good option and they abort.

While accelerators are proliferating quickly, little is known regarding the value of these programs, how to define accelerator programs, the differences between accelerators, incubators and co-working environments and the importance of the various aspects of these programs to the ultimate success of their graduates and the local entrepreneurship ecosystems.

In fact, the seed accelerator phenomenon shares many characteristics with the previous and more known mechanism of *business incubators*. For this reason, it is important to introduce the notion of incubation before moving deeply inside the accelerator concept.

²² Miles, M.P., De Vries, H., Harrison, G., Bliemel, M., De Klerk, S., Kasouf, C.J. (2017). “Accelerators as authentic training experiences for nascent entrepreneurs”. Emerald Publishing Limited

2.1.2 - Incubators

Incubators first arose in the United States during the 1950s, it is widely recognize that the first business incubator was the *Batavia Industrial Center* in New York, which opened in 1959, with the general purpose of providing institutionalized environments that were able to assist and enable startup companies and business ideas to grow by supporting the entrepreneurial processes and providing basic infrastructures to startup firms, such as working spaces, business contacts, skills and shared resources like IT equipment (*Allen and McCluskey, 1990*)²³.

In fact, to pursue their business opportunities, entrepreneurs need to acquire various critical resources and in particular funding, at very early stages of their startups. Since new startups have limited access to entrepreneurial networks and lack credibility with external stakeholders, incubators played a big role in helping to overcome such liabilities, linking technology, resources and know-how to entrepreneurial talent for the purpose of accelerating the development of new companies. By joining an incubator, new ventures limited their overhead costs by assessing and sharing the costs of office facility resources.

At first, incubators were public policy instruments aiming to foster entrepreneurship and regional development in the attempt to create jobs and catalyze local economic growth, they were generally established by a university, a local government or a non-profit organization with the aim of providing some basic support to entrepreneurs.

Incubators maintained a good reputation for a long time because, historically, startups participating in incubators programs had a greater chance of succeeding in comparison to those that did not participate.

The concept of incubation results to be important for the study and understanding of accelerators since they seem to share common features. In fact, they both accept early startups which appear to have a potential commercial viability and they both provide an

²³ Allen, D. N., McCluskey, R. (1990), "Structure, Policy, Services, and Performance in the Business Incubator Industry", *Entrepreneurship Theory & Practice* 15(2): 61–78

environment intended to meet startups' needs. But, on the other hand, they also differ in several ways which will be analyze later in this chapter.

2.2 Distinguishing accelerators from incubators and angels

Since the literature is pretty vague and sometimes discordant in defining accelerators, it is difficult to find a clear and unique definition of these programs which, for this reason, can sometimes be confused with the concepts of incubators or angel investments with which accelerators share some similarities, but from which they also differ in many different ways.

The definition of accelerators provided by *Cohen (2013)* and later *Cohen and Hochberg (2014)* as a fixed-term, cohort-based program, is an important feature in the qualification and distinctions of these programs in comparison to others, such as incubators: while accelerators bring their startups in batches for a few months (generally no more than 3 to 6 months) which represents the cohort element, incubators are typically just shared workspaces, with staggered entry and exit of entrepreneurs over time, resulting in a continuous turnover.

Many incubators offer also education, services and mentorship but, differently from accelerators, these are mostly ad hoc.

Recent research has shown that the cohort-based aspect of accelerators, combined with the fixed, short-term, is an important part of their efficacy that, together with the Demo Day (which serves as a hard deadline), help accelerate progress putting pressure on the participants.

The literature suggests that incubators' principal objective is often to protect startups from the dangers of the outside world, many times prolonging the existence of businesses improperly designed and bound to fail while, in contrast, accelerators confront startups with this reality quickly, leading to either acceleration or fast failure.

In order to being able to distinguish those different terms we need first to identify the role and schedule of accelerators and then outline the differences between accelerators and other forms of startup investment.

2.2.1 What do accelerators do?

Commonly, accelerators help ventures in the definition and the development of their products during the initial phases, in the recognition of the most promising customer segments and in securing them with both human and capital resources.

Accelerator programs are temporary, usually not longer than three to six months and, in this period of time, they are able to provide seed capital (usually ranges from 0\$ to 50k\$), together with plenty of non-monetary services such as working spaces, networking, educational and mentorship opportunities such as successful entrepreneurs, program graduates, venture capitalists, angel investors or even corporate executives. Furthermore, the majority of them culminate with a grand event, usually known as “Demo Day”, where ventures pitch to a large audience or qualified investors.

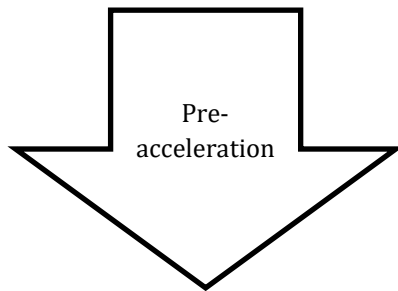
In return, accelerators usually take an equity ranging between 5 to 8 percent of equity (*Cohen and Hochberg 2014; Hoffman and Radojevich-Kelley 2012*).

Besides the differences from one accelerator to another, there are some typical characteristics that are common to almost every kind of accelerator. *Miles M.P. et al. (2017)*²⁴, taking in examination three-months long accelerators’ programs, found out that they are generally scheduled as follows:

1. During the first month, the pre-selected teams move into a shared co-working space where they meet with each other and with the mentors, coming from different perspectives and experiences, with whom they will have an exchange of mutual learning, attending workshops, seminars and entrepreneurial ecosystem networking events;
2. In the second month, teams start to develop and test with real customers the business model generated from all the information gathered during the first month, receiving the first feedback;
3. In the third month, teams are pretty much concerned to refining the business proposition and developing the presentation for the formal pitch at the Demo Day in the attempt of receiving business angels and other investors’ attention.

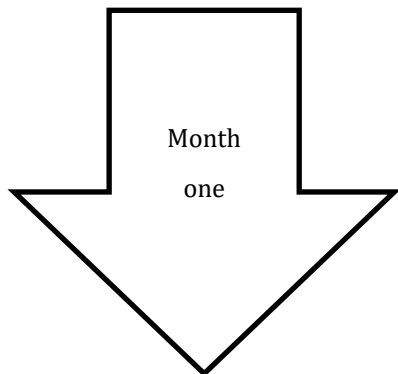
²⁴ Miles, M.P., De Vries, H., Harrison, G., Bliemel, M., De Klerk, S., Kasouf, C.J. (2017), “Accelerators as authentic training experiences for nascent entrepreneurs”, Emerald Publishing Limited

We can summarize the accelerator program as follow²⁵:



Authentic context

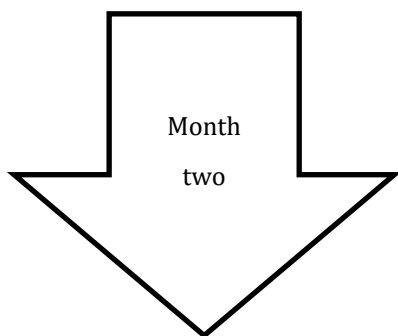
- Competitive application process asking entrepreneurs to present themselves and their venture idea in the best possible light



Access to Expert Performance and Multiple perspectives + Authentic Activities

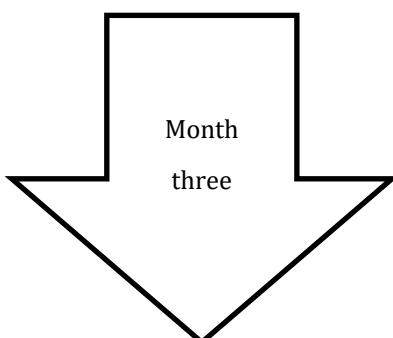
- Receive seed funding
- Move into accelerators and meet other teams, staff and mentors
- Educational seminars
- Mentor and staff coaching toward:

- business model development
- develop an initial minimum viable product (MVP)



Authentic articulation + coaching + collaborative learning

- peer-learning through accountability meetings
- out-of-the-building engagement to:
- validate business model and MVP
- gain evidence of customer and supply chain buy-in



Authentic assessment and reflection

- peer learning through accountability meetings
- out-of-the-building engagement to
- validate business model and MVP
- gain evidence of customer and supply chain buy-in
- Demo Day

²⁵ Sources: www.casefoundation.org; www.lightninglab.co.nz

2.2.2 Accelerators vs incubators

Undoubtedly, much of the accelerators characteristics are similar to those of incubators or angel investors but they also differ in several ways.

In general terms, incubators are designed to help nascent ventures by protecting them from the environment, providing them a safe space to operate in. On the other hand, accelerators are designed to speed up market interactions in order to help nascent ventures adapt quickly and learn.

Cohen and Hochberg (2014) summarize the differences between incubators and accelerators in four main dimensions:

1. *Duration*

the fundamental difference of accelerators programs in comparison to incubators is represented by their limited duration nature, opposed to the life-long incubators duration;

2. *Cohorts*

unlike incubators, accelerators are mostly cohort-based, so ventures enter and exit the programs in group, known precisely as cohort or batches, fostering strong bonds and communal identity between founders in the same accelerator cohort;

3. *Incentives*

contrary to incubators which are usually publicly owned, accelerators are generally privately owned and, for this reason, take equity stakes from participating in the programs which enable the founders to work full-time on the new venture;

4. *Educational programs*

mentorship and education are on the basis of accelerators programs and one of the main reasons of ventures participation. Also, incubators offer some professional services but education at accelerators seems to be more complete, including often seminars on entrepreneurship topics.

2.2.3 Accelerators vs Angel Investors

Angel investors, or simply angels, are individual investors who provide seed capital investments and varying amounts of advice to young firms.

Similarly to accelerators, angels aim to help nascent ventures through financing actions but, following *Cohen and Hochberg (2014)*, they differ from accelerators in, at least, three key ways:

1. *Duration*, the limited time associated to accelerators programs force a frequent exchange of information and opinions between accelerator directors and participating ventures, encouraging ventures to learn and adapt;
2. *Business model and selection*, the accelerator format helps selecting firms by combining the funds of many investors, spreading risk across more portfolio firms;
3. *Education, mentorship and co-location*, angel investors may find more difficulties in being able of influencing the strategic direction of the portfolio companies, on contrary, accelerator directors work alongside their participating ventures and connect them with mentors.

Summary of the differences between incubators, angel investors and accelerators (source: “accelerating startups: the seed accelerators phenomenon”; Cohen, Hochberg; year: 2014):

	Accelerators	Incubators	Angel Investors
Duration	3-6 months	1-5 years	Ongoing
Cohorts	yes	no	no
Business model	Investment; non-profit	Rent; non-profit	Investment
Selection frequency	Competitive, cyclical	Non-Competitive	Competitive, ongoing
Venture stage	Early	Early or late	Early
Education offered	Seminars	Ad hoc, hr/legal	None
Venture location	Usually on-site	On-site	Off-site
Mentorship	Intense, self-and-others	Minimal, tactical	As needed, by investor

2.3 - Data availability and databases

Because of the relative newness of the accelerator phenomenon and the reluctance of startups to disclose information, limited research and data is available. The absence of significant data affect both the ability of researchers to conduct rigorous programs' evaluation and the ability of entrepreneurs, investors and policy makers to assess the relative quality of the programs.

Since many accelerator programs are nascent themselves, it can be difficult to assess their long-term viability. It is difficult to define and measure the performance of an accelerator, which can be defined in terms of job and firms' creation (e.g. number of successful exits from the accelerator, number of employees in firms), or in terms of economic returns (e.g. investment ROI, revenues generated by the accelerator, increase in valuation of firms).

Furthermore, also in those cases in which accelerators' performance has been defined in some way, very few of them make their performance data available for assessment. Moreover, even when performance is defined and measured, there is very little understanding of the factors that drive accelerator performance.

Given that the value of accelerators is very much dependent on the support services they provide to firms, performance probably depends significantly on the quality of accelerator management team that provides the services, which can add value by providing personal relevant knowledge and skills developed through their own direct experience or gained through their professional network.

Among the databases of seed accelerators and their companies, we can quote *Seed-DB* (www.seed-db.com), *CrunchBase* and *The Seed Accelerator Rankings Project (SARP)*, now at its sixth year, which collects detailed data in order to produce an annual published ranking of accelerator programs throughout the U.S. on a variety of outcomes of interests to entrepreneurs.

According to reports in SARP's 2017 accelerators ranking report, their main goal is "to encourage a larger conversation and research about the seed accelerator phenomenon, its effects and its prospects for the future, but more importantly, provide transparency

and stimulate productive discussion between accelerator directors, startups, investors, policy makers, academics and the rest of the startup ecosystems”²⁶.

Because of the lack of performance data about accelerators programs, SARP’s main goal is to offer greater transparency thanks to its huge collection of data provided by accelerator’s programs themselves. Accelerators and startups are usually reluctant to publicize their sensitive data because they want to protect themselves and their intellectual property. For this reason, SARP aggregates those information in order to provide comprehensive information about program’s success without revealing individual startups’ details.

These ranking resulted, can be used as a guidance for entrepreneurs that want to participate into an accelerator program and want to know how programs differ between each other in terms of performance and, on the other hand, encourage accelerators to be more transparent and grant access to their data.

As a result, the ranking resulted offers a measure of transparency, guidance and valuable insight, useful to entrepreneurs attempting to choose the best program for their startup. Transparency is essential because going through an accelerator program involves high costs for the entrepreneur. Following SARP 2017, the average program takes 6% equity stake in the company, for a seed investment that averages \$39.5K.

The data collected by SARP appears to be the most comprehensive dataset on accelerators to date.

Over 150 programs participated into SARP’s 2017 ranking which selected them on the basis of the following criteria:

- *Meet the definition of accelerator* (fixed-term, cohort-based program with mentorship and education component that culminates in a public pitch event or Demo Day);
- *Have graduated at least one cohort* and have at least *10 alumni*;
- *Being based in the U.S.*

²⁶ Hochberg, Y., Cohen, S., Fehder, D. (2017), “2017 accelerators rankings report”, SARP, http://seedrankings.com/pdf/sarp_2017_accelerator_rankings.pdf

In order to have a more comprehensive understanding of the leading success factors of accelerators programs, SARP conducted an extensive field work, interviewing venture capitalists, angel investors and accelerator program directors.

After collecting all the data gathered on a full complement of metrics, SARP evaluated accelerators based on those factors that appeared to be leading indicators of entrepreneurial success:

- *Valuation*, (determined when a firm has a priced round).

SARP took into consideration mean and median valuation of all startups in the accelerator's portfolio that have obtained priced financing. Because of the fact that some accelerators programs graduate earlier than others, SARP took also into consideration the mean and median valuation of the first, the second and the third year outside the program completion. First unconditionally, across the whole portfolio, and then conditional on having actually raised a priced round.

- *Qualified Exit*, (when a portfolio company either issues an IPO or is acquired for an amount greater than \$5M above the amount of capital raised by the company).

A qualified exit indicates that the company has reached a maturation such that the entrepreneur and other investors can decide to cash out if they wish. The sum of \$5M was chosen because it represents a sum of money that would materially affect entrepreneur's life.

- *Qualified Fundraising*, (when a portfolio company raises an aggregate of at least \$200k).

SARP considers the sum of \$200K, after the first year of graduation, as an indicator of the potential long-term success of the program, because it exceeds the guaranteed investment capital typically made available to any particular accelerator's graduates through convertible notes.

- *Survival*, (i.e. the percentage of startups still in business, is considered a controversial measure of success).

Since failure is considered "part of the game" with startups, SARP took it into consideration but weighted it lower than other metrics.

- *Founder Satisfaction*, (determined by a survey of the entrepreneurs who have graduated from the programs).

A survey was pushed to all graduates who participated into programs, asking to the entrepreneurs if they were satisfied by the experience and if they would repeat

the program knowing what they know now about it, and whether they would recommend the program to a friend.

Finally, all the metrics were weighted within categories, and categories were then weighted to produce an overall score.

As a final step, programs are ordered into levels based on clustering of overall index scores.


Since top programs usually score similar, SARP shifted its tiering system generating 5 top tier accelerators levels: Platinum Plus, Platinum, Silver, Gold and Bronze.

Top Tier Accelerators (based on data of SARP rankings accelerators, 2017)

TIER	PROGRAMS (alphabetical within tier)
PLATINUM PLUS	AngelPad, Y Combinator
PLATINUM	Alchemist, Amplify LA, MuckerLab, StartX, Techstars, U. Chicago New Venture Challenge
GOLD	500 Startups, Gener8tor, Hax, Healthbox, IndieBio, MassChallenge, R/GA, SkyDeck
SILVER	Brandery, Capital Innovators, Dreamit, Plug and Play, REach, Yield Lab, Zero to 510
BRONZE	Accelerprise, AlphaLab, FoodX, Health Wildcatters, Lighthouse Labs, UpTech, XLR8UH

SEED ACCELERATOR RANKINGS PROJECT

2017 ACCELERATOR RANKINGS

PLATINUM	PLUS	 	<p>AngelPad Y Combinator</p>
		     	<p>Alchemist Amplify LA Mucker Lab StartX Techstars U. Chicago New Venture Challenge</p>
GOLD		       	<p>500 Startups gener8tor HAX Healthbox IndieBio MassChallenge R/GA SkyDeck</p>
		     	<p>Brandery Capital Innovators Dreamit PlugAndPlay REach Yield Lab Zero to 510</p>
BRONZE		      	<p>Accelerprise AlphaLab FoodX Health Wildcatters Lighthouse Labs UpTech XLR8UH</p>

For the full ranking and methodology, go to www.seedrankings.com

Figure 14: SARP (2017)



2.4 - Success factors of startups business accelerators

Business accelerators, as already mentioned several times, help the nascent firms and particularly high-tech startups succeeding in the early stages of development by providing support services such as office spaces, mentoring, networking and variety of educational programs.

The benefits related to supporting new ventures in their early stages, known to be the most delicate and fragile, has been largely recognized for decades.

The success factors of a business accelerator are able to minimize the startup's team failures and they also help acquiring legitimacy in stakeholders' eyes, which plays a central role for accelerators survival and growth²⁷.

As anticipated, business accelerators provide startups' teams with high quality mentors, which seems to be the most crucial reason why startups decide to participate to such programs. Furthermore, accelerators provide important networking opportunities that may be of various forms, for example, the most common way consists in offering different events such as Demo Days during which startups have the opportunity to enter in contact with a large number of investors. Another important characteristic of accelerators is the fact that a cohort of ventures enters in those programs at the same time.

*Miller and Bound (2011)*²⁸ in their study about accelerators, were able to identify five main features that allow us to distinguish accelerator programs from other startups' support programs and that appear to be their key success factors:

1. *An application process that is open yet highly competitive,*
the selection process of accelerators is more well-structured than other incubation processes, often consisting in an online application via software platform, reviewed by an internal team and external partners and in a later interview with the selected startups.

²⁷ Clarysse, B., Yusubova, A. (2014), "Success factors of business accelerators", Ghent University Library

²⁸ Miller, P., Bound, K. (2011), "The Startup Factories. The rise of accelerator programmes to support new technology ventures", NESTA

Usually, accelerator programs involved a web-based application process available from everybody, everywhere in the world. Those applications are generally designed to reveal as much as possible about the startup's team and its idea. After a first selection based on the application, the process of selection continues generally including an interview with the pre-selected startups from which the final selection will be made. This process, from the application to the decision, is generally quite short but highly selective;

2. *A provision of pre-seed investment, usually in exchange for equity,*

The amount of investment provided by the accelerator program varies on the basis of various factors like, for example, the cost per co-founder of living during the program and it usually varies from a minimum of \$10,000 to a maximum of \$50,000 for the first three months generally in the form of convertible note or equity investment;

3. *A focus on small teams not individuals,*

the cost related to lone founder's startup is generally too high and simultaneously teams that are too large will need higher costs too, so it is preferable to focus on startups with small teams, generally around four members;

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

The time-limited nature of accelerator programs results to be helpful in many different ways but mostly on creating a high-pressure environment that is able to foster rapid progress. In fact, during the three to six months in which startups are supported, they are able to get in contact with a vast number of professionals of the sector and participate to thematic sessions where mentors present their ideas and experiences with two-fold aim: the first is to challenge teams and give them honest and useful feedback, the second consists in give them the chance of establishing long-term relationships with the mentors who can decide to become investors in the company. In fact, an essential characteristic of accelerator programs is represented by the extensive network of qualified mentors. Finally, a consistent feature of those programs is the Demo Day designed for allowing angel investors and venture capital investors to control what has been developed during the program and giving companies the opportunity to launch their products or services to the outside world.

Business accelerators are more oriented towards the intangible services that involve a significant amount of education, high-quality mentorship, coaching, workshops, weekly evaluation during the program period, financial and legal support and tangible services such as office spaces. Mentors, which are selected on the basis of their expertise, experience and desire to help, work with startups' team throughout the duration of the program providing valuable advices and feedbacks. Each startup interacts with each type of mentor. The majority of accelerators companies highlighted the mentorship as the most essential element of business support services.

Accelerators programs offer an external and internal network opportunity for new ventures through a variety of events. Demo day is a valuable feature of business accelerators, organized to connect startups with high quality groups of investors and customers;

5. *Startups supported in cohort batches or 'classes',*

One of the main differences between accelerators and other early-stage investment programs is the fact that in accelerator programs cohorts or batches of companies are invested at the same time. A core advantage of that is the fact that companies are able to help each other and give them mutual support which, among other benefits, takes off some work to the accelerator management which can focus on other activities.

In addition to those factors, we can identify other causes for the accelerators' success For instance, from the venture capital investors point of view, accelerators serve a dual function: *deal sorters* and *deal aggregators* (Hocberg, 2015).

In fact, through the application process, accelerators are able to screen among a large population of startups to identify the most qualified candidates with highest potential and then the program aggregates these pre-selected candidates into a single location, attracting investors who benefit from the lower costs of searching for opportunities.

The aggregation and sorting function of accelerators is thus believed to result in a reduction in search and sorting costs for the venture capital investors. So, in this sense, venture capital investors may be more interested in investing in accelerators because of the benefits deriving from the early access to the admitted portfolio companies, which allows them of making a more informed decision and establish a relationship with the companies, than for an expected direct return on their contribution to the accelerator.

2.5 – Collaboration between corporates and startups: corporate accelerators insight.

Big corporates are recognizing the fact that startups, especially digital and high-tech ones, are disrupting whole industries and for this reason they are starting to see startups not as a threat but as potential partners to increase their value with, which has resulted in the creation of a great number of partnerships, collaborations and hubs by larger companies to foster this collaboration with startups.

Startups and big companies are indeed able to bring each other great benefits from a collaboration, leading to a win-win situation.

In fact, startups allow corporates to develop and test new technologies and services' solutions with less costs and risks. Furthermore, startups are a huge source of talents and ideas that can help corporates to find a new image.

On the other hand, corporates allow startups to reach market knowledge and experience, economies of scale, established networks and brand power along with other resources they should not have without this collaboration.

*Nesta's publication (2016)*²⁹ discerns this argument, giving an exhaustive overview about the collaboration between corporates and startups and the barriers related to it.

Innovation has been recognized as the main factor in sustaining corporate success. In fact, it has been seen that innovative firms grow twice as fast as non-innovative ones, both in employment and sales. Despite that, large companies find difficulties in the attempt to innovate because of the presence of a lot of barriers, both internal and external to the organization. For this reason, more and more corporates are choosing to collaborate with startups as part of their innovation strategy. This results to be particularly useful for digital or high-tech sectors where the rate of innovation is faster.

Nesta's research shows that both parts benefit from this collaboration, in fact startups hope to gain visibility and enhanced publicity or reputation, business development

²⁹ Bannerji, S., Bielli, S, Haley, C. (2016), "Scaling together. Overcoming barriers in corporate startups collaboration", NESTA

(entering new markets or gaining new customers) and gaining markets knowledge or access to key contacts.

On corporates side, the collaboration leads mainly to increase and innovate the business.

Although there is a huge awareness about the potential benefits deriving from this kind of collaboration, many firms do not have collaborative programs and startups on their part do not always know how to initiate a relationship.

Nesta’s research recognized many pros and cons in the decision of establishing a corporate-startup collaboration³⁰:

	PROS	CONS
SHORT-TERM	<ul style="list-style-type: none"> - New technology, services or products from startups may help firms to stay competitive and/or expand into new markets. - Collaboration can bring brandinnovation that is attractive to potential customers, business partners and future employees - Startups may bring fresh thinking to help solve core business problems 	<ul style="list-style-type: none"> - Introduces new forms of risk; changes existing risk profile - Possible disruption to existing teams and processes - Rate of failure usually high for startups, which may affect business continuity - Potentially high short-term costs and low immediate returns (in time and resources)

³⁰Bannerji, S., Bielli, S., Haley, C. (2016), "Scaling together. Overcoming barriers in corporate startups collaboration.", NESTA, https://media.nesta.org.uk/documents/scaling_together.pdf

LONG-TERM	<ul style="list-style-type: none"> - Increased market share and/or possibility of entry into new markets. - Rejuvenated corporate culture and increased internal learning - Increase in shareholder value - Reinforced leadership position in industry/vertical - Agility to adapt 	<ul style="list-style-type: none"> - Possible reputational damage arising from soured startup deals or failure to supply - Possibility of considerable resources spent with minimal return on investment
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Even when there is the will for a collaboration, there are a lot of barriers that make this result difficult to happen or make it less effective. Some of the factors that can affect this collaboration are pretty known, like trust and mutual interest, but others, such as imbalance in power, are less known but quite frequent, especially in situation of asymmetry such as the one between corporations and startups.

We can identify two main clusters of barriers both from corporate and startups point of view: *internal and external barriers*.

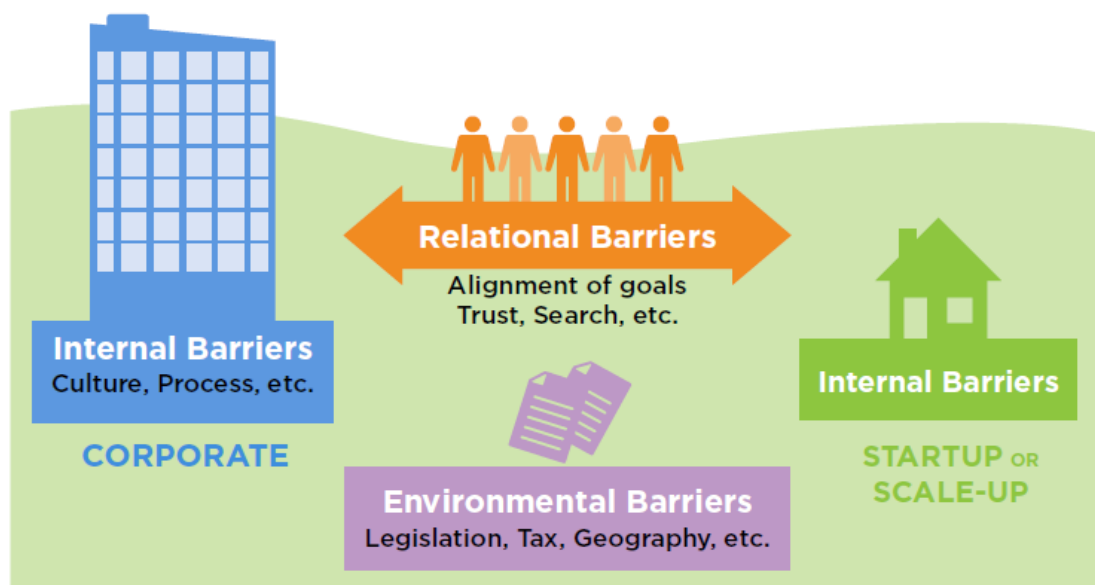


Figure 15: NESTA (2016)

From the corporates point of view, internal barriers are usually related to issues such as: strategy, structure, organizational culture or internal processes.

From startups point of view, internal barriers are usually related to relational or transactional issues, mismatch in speed, coordination, poor communication or unclear processes.

On the other hand, external barriers, are factors that are usually outside the corporate's control, among them: environmental factors (such as legislation) and relational factors (such as trust).

Startups, as anticipated, can also face internal barriers, but since those barriers are usually related to limited resources and inexperience, or are mirror of corporate issues, results to be more useful to analyze only corporate internal barriers in the specific.

Bannerji and Bielli (2016) grouped corporate internal barriers into four main categories: strategy, structure, organizational culture or internal processes.

1. *Strategic barriers*: given that large companies are complex organization often characterized by internal conflicting goals and objectives, there is the high possibility of strategic misalignment among departments also for what concerns external collaborations. This can be the result of misconception of what startups are and non-transparent information flows within the organization;
2. *Structural barriers*: difficulties related to the highly rigid hierarchical decision-making structure of companies can be a huge internal barrier to overcome. This can result in decisions that privilege the status quo over innovation;
3. *Cultural barriers*: corporate cultures can sometimes be hostile to innovative, creative, risk-taking and failure tolerated environment of entrepreneurial culture. In this case, the tone at the top seems to be crucial in developing and spreading the proper culture within the firm;
4. *Process barriers*: internal corporation processes, even if they work well for day-by-day activities, result to be inflexible and inappropriate for startups partnerships. This barrier can be overcome by the right tone at the top or by considering a parallel process dedicated to that purpose.

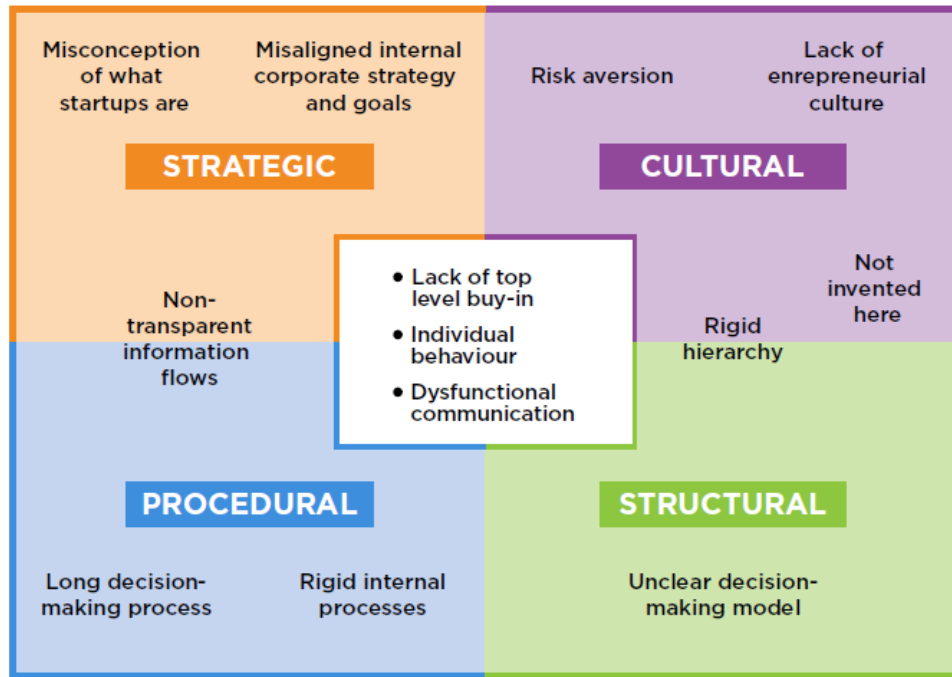


Figure 16: NESTA (2016)

For what concerns the external barriers, *Bannerji and Bielli (2016)* divided them into two main categories: relational and environmental.

1. *Relational barriers*: are issues arising from the mismatched, unequal and asymmetric relationship between startups and corporates;
2. *Environmental barriers*: are ecosystem impediments caused by public and economic policy, such as legislative obstacles, tax issues and geographic barriers.

While environmental barriers seem to play a less important role in the decision to undertake a collaboration between startups and corporates, relational barriers appear to play a central role in this sense. *Bannerji and Bielli (2016)* identified four main phases of the relational process:

1. *Initiating the relationship*: for startups is often difficult to identify the right corporate partner to speak with; large firms also face search problems for finding startups;
2. *Establishing the relationship*: in this phase, the main difficulty relates to being able to translate the technical advantages proposed by startups into a benefit for the corporate. Establishing trust is another big step to undertake;

3. *Progressing the relationships*: after the mutual interest is established the successive phase involves technical and legal assessments;
4. *Sustaining the relationship*: once the agreement is signed, the collaboration begins and there is the need of maintaining trust and ongoing perception of mutual benefit, monitoring and measuring success (or failure), is vital to keep track of the progression of the collaboration.

PHASE	INITIATING	ESTABLISHING	PROGRESSING	SUSTAINING*
Main Aims and Activities	<ul style="list-style-type: none"> • Find partner • Find contact point • Establish dialogue • Test common goals 	<ul style="list-style-type: none"> • Build trust • Outline form of collaboration 	<ul style="list-style-type: none"> • Negotiate terms and conditions (IP etc) • Contract 	<ul style="list-style-type: none"> • Resolve conflict • Maintain comms
Barriers	<ul style="list-style-type: none"> • Search problems 	<ul style="list-style-type: none"> • Cultural and language differences • Different expectations • Lack of information 	<ul style="list-style-type: none"> • Slow decision-making • Power imbalance • IP negotiation 	<ul style="list-style-type: none"> • Change of contact • Loss of interest • Change of strategic priorities • Internal reorganisation

Figure 17: NESTA (2016)

In a world where technology and business models are rapidly changing, collaboration with startups appears to be an increasingly important mechanism for corporate innovation which allow corporations to survive the disruption of their industry and maintain a competitive advantage over other companies that choose to not undertake this collaboration. For this reason, being able to engage in a business relationship of mutual benefit and collaboration between startups and corporations appear to be the most powerful tool companies have nowadays.

Since corporations are more and more aware of the great potential deriving from collaborating with startups, a particular form of acceleration has started to grow in the business environment: *the corporate accelerators*.

2.5.1 – Corporate accelerators

The phenomenal rate of innovation we are experiencing in the most varied fields made necessary to find new ways of innovation, besides the existing R&D departments which resulted to be not sufficient anymore to face the new global challenges. A lot of companies become obsolete and eventually run out of business because of the disruptive solutions emerging day by day at an unprecedented rate.

The major source of innovation today derives directly from startups because of their very own nature of utilizing emerging technologies to create new products or services and reinvent business models. For this reason, corporates that aim to adopt an open innovation strategy, increasingly look to startups as the main source of innovation.

In this context, *corporate accelerators* represent a particular form of accelerators intended to exploit startups' innovation through a direct collaboration with corporates. *Hochberg (2015)* defined corporate accelerators as “*a specific form of seed accelerator which is sponsored by an established for-profit corporation*”, similarly to seed accelerators they offer early stage support to startups together with mentorship, office spaces and often capital, but they also differ from them in the sense that their objectives derive directly from the sponsoring corporation.

However, as previously said, corporations and startups present many differences between each other which make this collaboration challenging.

As the other forms of accelerators, corporate ones offer support to cohorts of startups providing mentorship, education with the addition of company-specific resources and they generally share the following characteristics³¹:

- An open application process;
- A focus on small teams and not individual founders;
- Time-limited support comprising company interaction and mentoring;

³¹ Kohler, T. (2016). “Corporate accelerators: building bridges between corporations and startups”, *Business Horizons*, vol. 59, issue 3, pag. 347-357

- Cohorts of startups rather than individual companies.

T. Kohler defines corporate accelerators as “company-supported programs of limited duration that support cohorts of startups during the new venture process via mentoring, education and company specific resources”.

Following Kohler, corporate accelerators based their roots in business incubators with the aim of surpassing existing organizational structures and launching a greater number of ventures more rapidly.

However, today's corporate accelerators deviate from past business incubators, in fact their main goal is to bridge the gap between corporations and startups relying on the fact that each one can benefit from a collaboration and a mutual exchange of resources, technologies, knowledge and experience, given that each one own what the other lacks: startups are, for their very nature, innovative, source of new technology, growth-oriented businesses in search of repeatable, scalable business models, while corporations have well-designed models that can be easily execute, they usually benefit from a well-known brand and can count on a powerful network.

On the other hand, startups usually lack resources, network and brand image legitimation, while corporates tend to remain true with the processes they have optimized failing in searching for new technology or innovative processes, which sometimes can bring to missed opportunities.

This complementary nature of startups and corporations demonstrate the mutual benefit deriving from this collaboration: startups will receive help to improve their execution and corporations will receive support in searching for innovation.

Following *Hochberg 2015*, corporate accelerators result to be often similar to regular accelerators in their structure (they are fixed-term, cohort-based programs) but they also differ from them presenting some untypical and evolving characteristics, which allowed him to identify four different subtypes of corporate accelerators:

1. “*Powered by*”, where corporations decide to rely on to an experienced third party to run an accelerator for them and provides core elements such as management, staffing, marketing and back office services;

2. “Internally-run” accelerators (like Microsoft or Telefonica);
3. “Consortium model” which implies a collaboration between companies that create a jointly-run dual or multiple partnership accelerator;
4. “Completely internal model” which only focus on internal projects.

Over the last few years, starting from the early 2010s, there has been a huge emergence of corporate accelerator programs worldwide: by the end of 2016, the *Corporate Accelerator Database* listed 71 active programs.³²

Companies from diverse industries have understood the opportunities deriving from engaging with startups.

Even though this phenomenon is in continuous expansion, there are no studies able to offer guidance to companies that want to establish a corporate accelerator. Moreover, different design and configurations will be needed to foster the specific objectives of each organization.

According to the analysis conducted by *Kanbach and Stubner (2016)* on 13 case studies of corporate accelerator programs, located in Germany, sponsored by one established company with its main business not being investment in startups, they were able to identify two complementary sets of results³³:

1. *Corporate accelerator objectives*

What results from Kanbach and Stubner analysis revealed a variety of objectives with varying priorities: *primary objectives*, that provide the main program reason of being, and *additional objectives*, that supplement program’s rationale.

- *Primary objectives* can be further divided into financial and strategic where *financial objectives* are those deriving from the fact that participating in a corporate accelerator program leads to an increase in the startups value which results also in an increasement in the parent company’s shares value; while strategic objectives are able to provide a concrete understanding of the importance of supporting corporate innovation and Kanbach and Stubner

³² Data taken from “The Corporate Accelerators Database” (<https://www.corporate-accelerators.net/database/index.html>), last updated December 2016

³³ *Kanbach, D.K., Stubner, S. (2016), “Corporate accelerators as recent form of startup engagement: the what, the why and the how”, The Journal of Applied Business Research, Vol 32, Num 6*

identified three main strategic objectives, first, gaining an understanding of current market developments, trends and technologies that allow company to identify developments and recent trends, second, the further development and integration of products and services from the startups and third, evaluation of innovative products and services that have the potential to disrupt the current business of the company.

- *Additional objectives* are represented by the knowledge and entrepreneurial spirit generated from the exchange deriving from the interaction of startups with employees from various departments and the impact on marketing and public relations that participation into these programs generates.

2. *Corporate acceleration configuration*

Kanbach and Stubner identified two dimensions of corporate accelerator configurations: *program focus* and *program organization*. Which can be further divided into 8 subcategories:

- Program focus:
 1. Locus of opportunity
 2. Strategic logic
 3. Industry focus
 4. Equity involvement
 5. Venture stage
- Program organization:
 1. External partner
 2. Connection to parent
 3. Leadership experience

Following their analysis, Kanbach and Stubner were able to identify four types of corporate accelerators based on primary objectives and program configuration:

1. *Listening post*, with pure strategic orientation without any direct financial objective underlined also by the fact that no equity is involved for the parent company in the startups;
2. *Value chain investor*, has main strategic orientation with the objective of developing startups with new and innovative products or services to utilize somewhere along the value chain;

3. *Test laboratory*, has a mainly strategic focus which find its peculiarity in the fact that this kind of corporate accelerator is often dedicated to internal business ideas and not exclusively focus on external startups;
4. *Unicorn hunter*, is the only type of corporate accelerator which pursue mainly financial objectives with the goal of earning financial premium on the numerous minority investments in startups.

What emerged from the study of Kanbach and Stubner is that corporate accelerators are not uniform and that they vary depending on the objectives they intend to pursue and their specific configurations in addition to the general purpose of innovating. From their analysis they were able to identify four different common types of corporate accelerators.

CH. 3 – CITIES AS THE NEW HUBS OF HI-TECH INNOVATION

As we have seen in the previous chapters, startups are the major source of technological innovation, offering brand new technological solutions that are able to shape industries with a rate of change never experienced before.

This change provided by startups is not only visible in the products or services they are able to create, but also in the way they are changing the business environment in which they are rooted, included the geographical position of startup companies themselves. In fact, if not that long ago, startups and innovation were concentrated more in technology parks located in suburban areas, the most recent trend has seen cities becoming the new hubs of technological innovation.³⁴

The reason for this shift is to be found in the high concentration of people and jobs characterizing cities, which helps in exchanging information and in the spreading of tacit knowledge and skills through the interactions among individuals and firms that would not be able to reach the same levels with formal documents transferring.³⁵

Cities offer a combination of factors useful for the development of a thriving business environment, thanks to the proximity, density and variety of people and firms³⁶ agglomerated within the same fairly small area, along with typical cities' characteristics such as cafes, music festivals, art shows and other informal places where creative people can meet and exchange ideas between each other.

Entrepreneurs, in fact, want to be “where the action is” (*Florida 2013*)³⁷ and look for conventional startup support, as well as nightlife, social activities and other potential collision points, all things that can be easily achievable within cities.

³⁴ Mulas, V., Minges, M., Applebaum, H. (2015), “Boosting tech innovation ecosystems in cities. A framework for growth and sustainability of urban tech innovation ecosystems”, *The World Bank*

³⁵ Carlino, G., Kerr, W.R. (2014), “Agglomeration and innovation”, *National Bureau of Economic Research, Cambridge MA*

³⁶ Athey, G., Glossop, C., Harrison, B., Nathan, M., Webber, C. (2007), “Innovation and the city. How innovation has developed in five city-regions”, *NESTA*

³⁷ Florida, R. (2013), “The new global start-up cities”, *CityLab.com*, <https://www.citylab.com/life/2013/06/new-global-start-cities/5144/>

It is well known that innovation is the result of a series of complex interactions between people, business and institutions which is why cities become central in this sense, providing the right environment and infrastructure to support innovation, offering a wide variety of consumers and workers with different skills and cultures. The simultaneous presence of business, people and institutions is what makes the flow of ideas and knowledge spillovers possible.³⁸

Since innovation is driven by collaboration, the collision between different people, working on different things, is what make vibrant cities crucial in the process of innovation.³⁹ In fact, a homogeneous culture, even when it is composed by the most smart and talented people, is not likely to produce as much as an heterogeneous culture where different ideas and ways of working are able to circulate freely permeating the surrounding environment and contributing to the development of the area and the improvement of all the operators within it.

According to *Crowley (2011)*, there are two fundamental reasons why cities are important, that usually coexist in large urban areas:

1. *Agglomeration*, that provides businesses the access to a wide range of consumers and skilled workers along with the opportunity for individuals and businesses to share and exchange ideas and information;
2. *Specialization*, that allow inter-firm collaborations, better labour matching and labour mobility between firms and the ability to share supply chains.

For all these reasons, it is easy to assert that the most successful cities are those in which network of firms, universities, government and other institutions coexist and work together in the creation of new products and services, developing an innovative ecosystem.

³⁸ Crowley, L. (2011), "Streets ahead: what makes a city innovative?", *The Work Foundation*

³⁹ Satell, G. (2013), "Why cities are our most important innovation platforms", *Forbes*, <https://www.forbes.com/sites/gregsatell/2013/11/09/why-cities-are-our-most-important-innovation-platform/#7ab024917169>

3.1 - World overview

This phenomenon is proliferating all around the world, affecting not only the most developed countries but also developing countries, which are facing the most important demographic growth especially within cities. Among the most important cities in this sense, we can include: New York City, London, Berlin, Barcelona, Tel Aviv, Cape Town, Mumbai, Buenos Aires, Shanghai and many others.

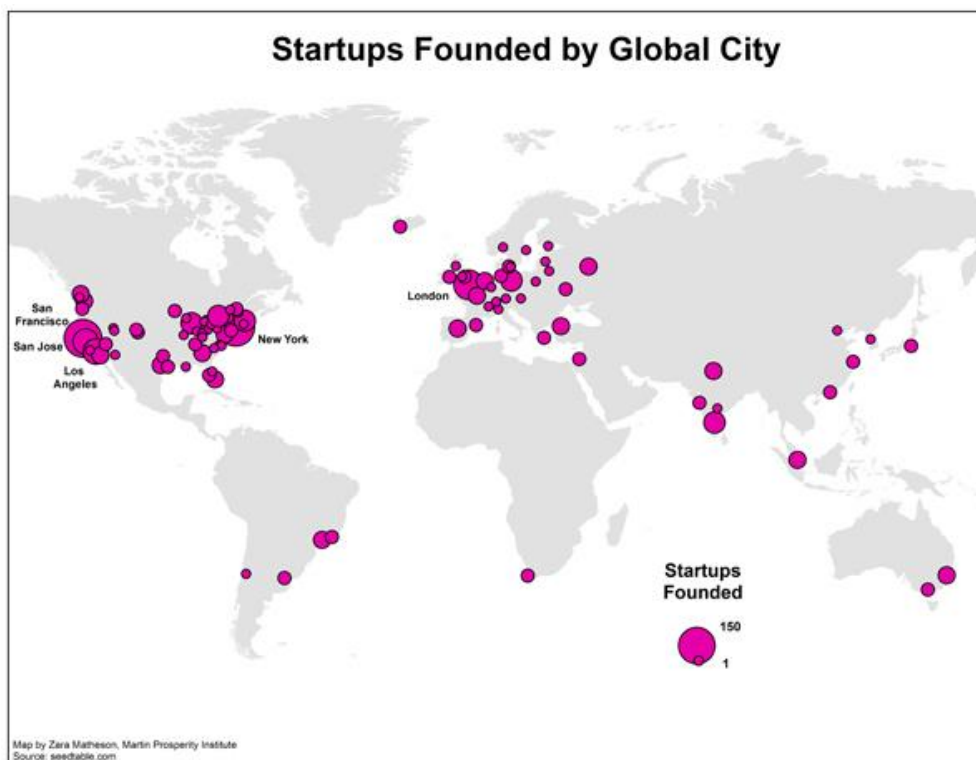


Figure 18: Seedtable.com (2015)

An estimate of *United Nations* by the end of 2016⁴⁰ showed that 54,5 percent of the world's population lived in urban settlements, with Africa and Asia at the first places in terms of urbanization, and the number is expected to increase over the next years: by the end of 2030 urban areas are expected to house 60 percent of the entire population.

Indeed, developing countries are not penalized from the "innovation game". In fact, given the high concentration of people within cities, they can tap into the continuously growing

⁴⁰ United Nations (2016), "The world's cities in 2016", Department of economic and social affairs UN

resource of human capital and talents to produce innovation hubs within their home countries generating jobs and economic growth while solving also local problems.

This can be done because tech and entrepreneurship skills have become easier to achieve, especially for young people: skills that once took years to be learned, now can be obtained in months or even weeks and more importantly are achievable everywhere in the world.

Despite that, the growth of cities as technology innovation ecosystems is not uniform everywhere: some cities appear to grow faster than others and be more sustainable. This result in a greater and more diverse ecosystem with higher number of startups, investment, employment and economic growth.

What results to be important, is trying to understand which are the key factors causing such differences in growth rates of startups' ecosystems worldwide and what can be done in order to support their development and sustainability.

As largely showed in *Carlino and Kerr (2014)* research, density of people and firms and agglomeration play a key role in the growth and development of an innovative ecosystem, with a positive correlation between size and density of the city. But, this is not sufficient to explain the diverse growth of cities similar in size and density or why some smaller cities grow faster than bigger ones, like in the case of Tel Aviv.

The role of policies, for example, results to be fundamental for cities' technology innovation success together with the presence of a varied ecosystem. Governments and other entities that support the emergence of urban innovation with the right policies, giving both support and incentives, proves to be fundamental for the successfulness of technology innovation ecosystems' creation and maintenance.

Following *the World Bank (2015)*, there are several tools governments can utilize to promote their startup ecosystem, among them we can number:

- incentives for kickstarting companies;
- rapid skills programs;
- competitions and challenges.

The World Bank findings show that policy actions are essential to obtain short and long-term results in the emergence and sustainability of urban technology innovation ecosystems.

But there are no formal rules to follow in order to develop a sustainable ecosystem so, trying to identify some key success factors from empirical research results to be useful. *The World Bank (2015)*, combining several institutions rankings based on indexes which are proxies of competitiveness and innovation, showed that similar factors were used globally to determine the rate of innovation within cities:

- Human capital;
- Business activity;
- Government;
- Information/knowledge;
- Infrastructure;
- Finance;
- Social/cultural aspects.

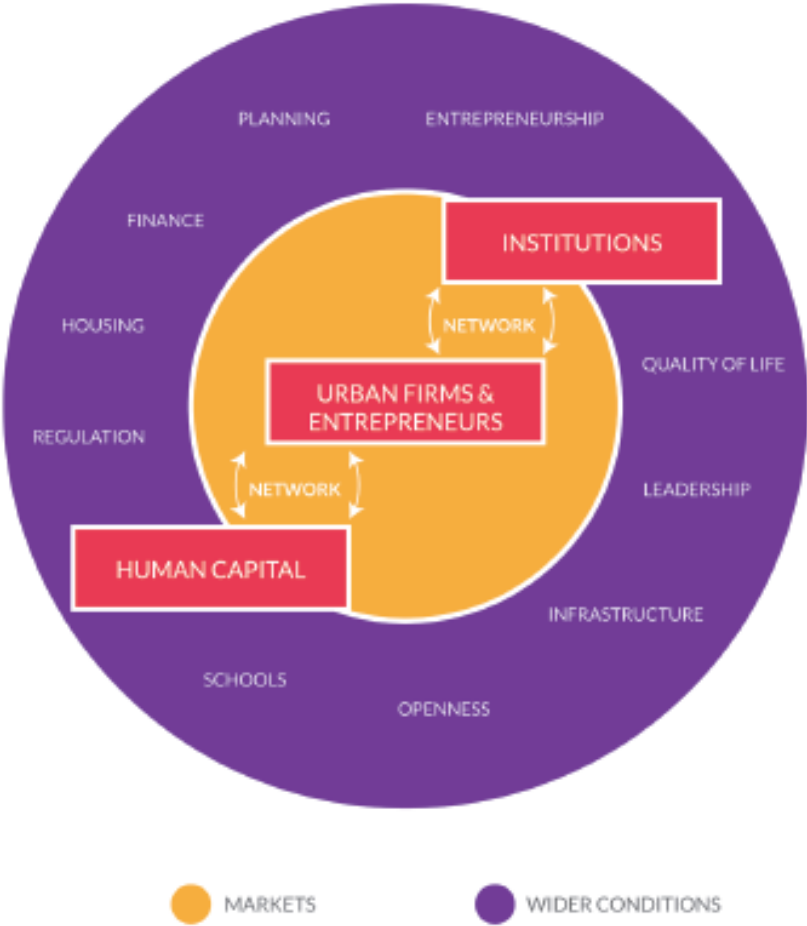


Figure 19: The World Bank (2011)

The World Bank's research, took also into consideration six different framework approaches to explain innovation ecosystems in urban environments in order to propose a newest and more complete framework of urban technology innovation to be applied in cities.

From this literature about innovation in cities and ecosystems in urban environments, they were able to construct a new framework on the basis of four main elements emerged as essential in the process of building a sustainable innovation ecosystem⁴¹:

- 1. *Human capital (people);*
- 2. *Physical assets (infrastructure);*
- 3. *Economic assets;*
- 4. *Governments and policies (enabling environment).*

All these four elements are connected through networking which plays a key role in boosting the size and rate of growth of the entire ecosystem, functioning as a multiplier.

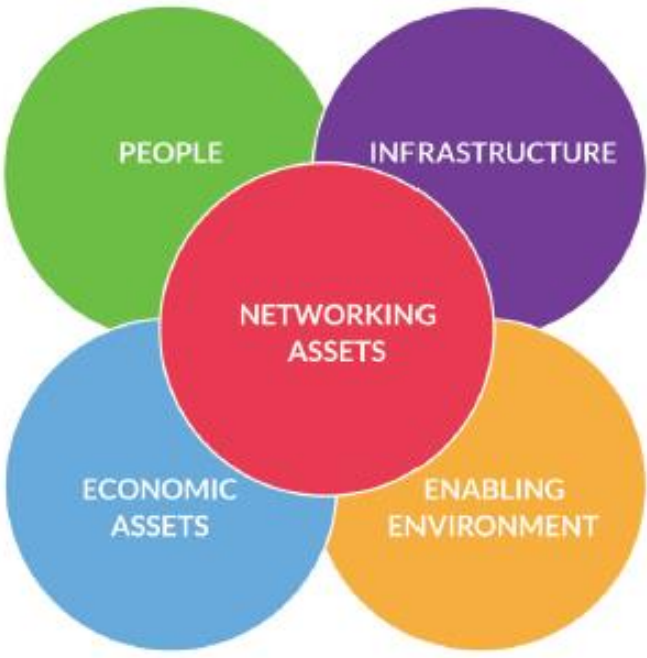


Figure 20: The World Bank (2015)

⁴¹Mulas, V., Minges, M., Applebaum, H. (2015), "Boosting tech innovation ecosystems in cities. A framework for growth and sustainability of urban tech innovation ecosystems", The World Bank

1. *People (or human capital)*: without this basic element innovation would not happen. The interaction and exchange of information and knowledge between people is at the very basis of the innovation process and the more diverse people are in their culture, characteristics, level of education and skills, the more varied and flourish the innovation ecosystem will be;
2. *Economic assets*: the economic assets are represented by all those elements of the ecosystem connected to the industry such as its size and variety of companies, the university and R&D facilities and the maturity and size of technology;
3. *Infrastructure (or physical assets)*: are essential to connect people with economic assets. They can include transportation infrastructures, broadband access, locations for events and meetings in general, green spaces, offices and any other kind of facility which facilitates the living conditions in a given area;
4. *Enabling environment (or government and policies)*: refers to the rate and quality of government contribution in ensuring proper public policies which enable innovation to grow and develop;
5. *Networking assets*: networking has a multiplier effect which is able to increase the number of collisions that result from social connections within the ecosystem facilitating the creation of new startups and employment. This category includes meetups, tech community events, bootcamps, collaboration spaces, accelerators, incubators, angel investors, venture capital and networks of mentors. Networking assets result to be essential for sustaining the social network of the ecosystem and boosting the ecosystem's growth by increasing the collisions. For all these reasons, networking assets result to be fundamental for the growth and success of urban technology innovation ecosystems.

From this research, what came up is that:

1. Fostering the increase of connections and building a community are critical actions to grow and sustain technology innovation ecosystems;
2. Networking assets play a key role in creating both of them.

3.2 - Technology innovation ecosystems as job creators

As already said, policies and policy actors play a key role in the establishment and sustainability of technology innovation ecosystems. In designing policies, actors have to consider that, first of all, technology innovation ecosystems in cities need to be considered as a *community or combination of communities* and secondly, the *focus* of these policies must be *the community* (its social dimension) rather than the geographic area.

1. *Addressing ecosystems as communities*: policies should support the creation of communities (because of their critical role in technology innovation ecosystem's creation and sustain) fostering the development of networking assets that play a multiplier role and are essential for community's kickstart, build networks or provide platforms such as collaboration spaces.
2. *Focus of policies on communities rather than geographic area*: since the focus for policy actors is the community, policies must not be relegated to a specific geographic area because it will have less impact and furthermore ignore one of the main key factors of building a sustainable ecosystem, rather they should be focus on the social dimension to be more effective.

Finally, as already said many times before in this thesis work, technology startups are the major source of employment and economic growth worldwide since they are able to create new businesses and employment categories.

In New York City, for example, technology sector has increased jobs faster than any other sector, creating more than 500,000 jobs from 2006 to 2013 and accounting for 12% of city tax revenues (*HR & A Advisor, 2014*).

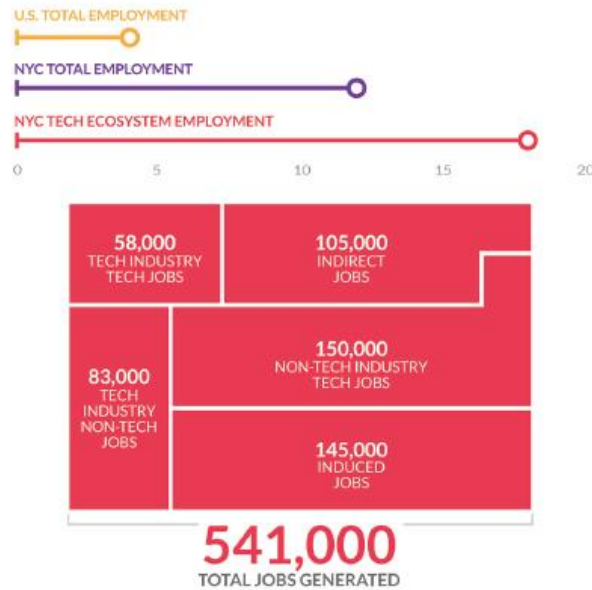


Figure 21: The World Bank (2015)

The same positive correlation between growth in the ICT sector and job creation of a city has been observed also in many other cities worldwide, such as Bangkok that adds over 3,000 jobs a year to its ICT industry (*National Statistical Office of Thailand*) or Barcelona, where ICT where ICT represent 29% of all companies (*Barcelona city council, 2012*).

But this growth of NYC's tech innovation ecosystem is not random. In fact, the active support of the government with targeted and strategic policy actions, has played a critical role in the ecosystem growth and sustain. Among those actions it can be numbered:

1. The promotion of collaboration spaces linked to mentors and incubators;
2. Attractiveness of the city in terms of venture capitals funds;
3. The promotion and attraction of engineering schools to develop programs aiming to provide basic skills training and access to open hardware tools;
4. Community energization through competitions and challenges, accomplished through opening data, mentorship networks and promotion of tech community.

The NYC example could be taken into consideration as a lesson for other cities around the world in developing and sustaining a technology innovation ecosystem in the attempt to foster job creation.

3.3 - Urban hubs and local links

Attempting to understand why some cities are more innovative than others, Nesta's report about innovation and the city, took into consideration some urban factors that could explain why innovation tends to concentrate in and around cities, establishing a model of urban innovation based on two interlocking concepts: *urban hubs* and *local links*

Urban hubs

Large cities that will almost inevitably innovate. Having a large and diverse population implies that businesses in cities can select the optimal mix of both suppliers and workers. Furthermore, business in cities implies having wider and easier access to the international flows of money, ideas, people and goods together with the proximity to different sectors' specialists that facilitates knowledge spillovers.

Cities characterized by a "strong urban hub" present larger and diverse market with international mindset, along with well-developed transportation and communication infrastructures.

On the other hand, cities with a "weak urban hub", present smaller or under-developed market with fewer local supply chain and poor connections across the city or with the nearby urban areas.

Local links

Since cities allow a complex and deep division of market and labour, this bring to the formation of specialized firms and skilled labour. Specialized connections and networks in cities help firms innovate faster, which means that the proximity allows firms to establish business and knowledge networks within a given sector or between businesses and public institutions.

Cities characterized by strong local links present firms with dense networks and diverse supply chains, furthermore they present strong links to urban institutions.

Cities characterized by weak local links present a less dense network and less strong links with institutions.

As seen, in local links models the role of institutions and networks appears to be more fundamental.

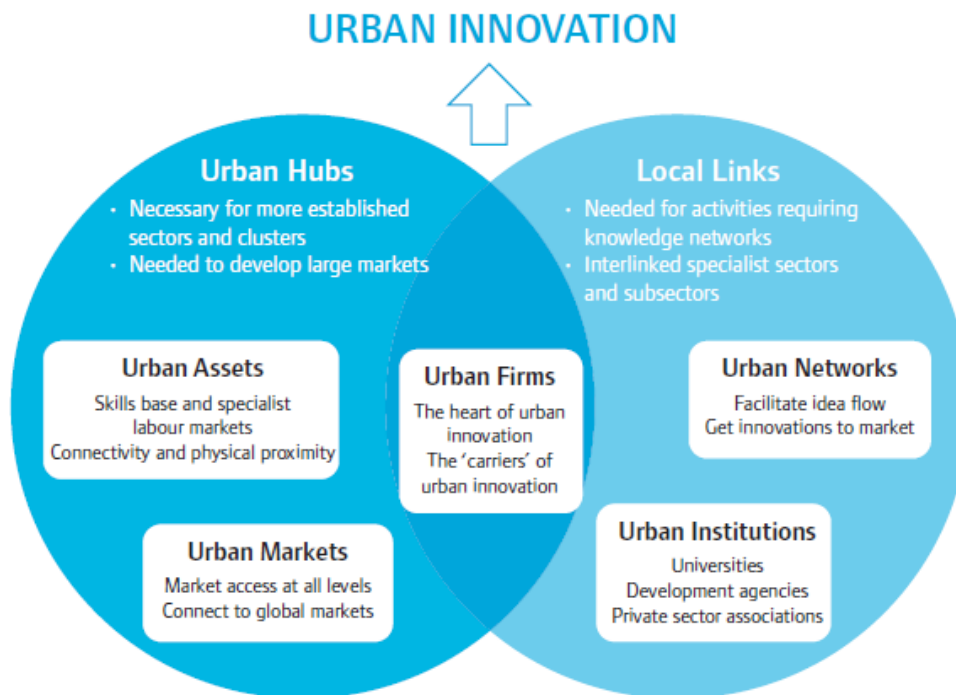


Figure 22: Nesta (2007)

3.4 - Global connectedness

Thanks to the new technology innovations, entrepreneurship no longer needs to be relegated within certain geographic boundaries: people and ideas can fly around the world freely. This trend has been followed also by venture capitalists who, in the last two decades, have started investing more and more beyond their national borders, expanding their portfolio.

The *Global Startup Ecosystem Report (2017)*⁴² produced by Startup Genome in collaboration with *Global Entrepreneurship Network (GEN)*⁴³, highlights, among the rest, how small ecosystems, like cities and regions, are able to accelerate their growth and increase their performance, being aware of the potential value given by nurturing new and young businesses in their economies.

According to *Startup Genome (2017)*. Silicon Valley, London and New York City are the best three startup ecosystems in terms of “inbound” global connections:

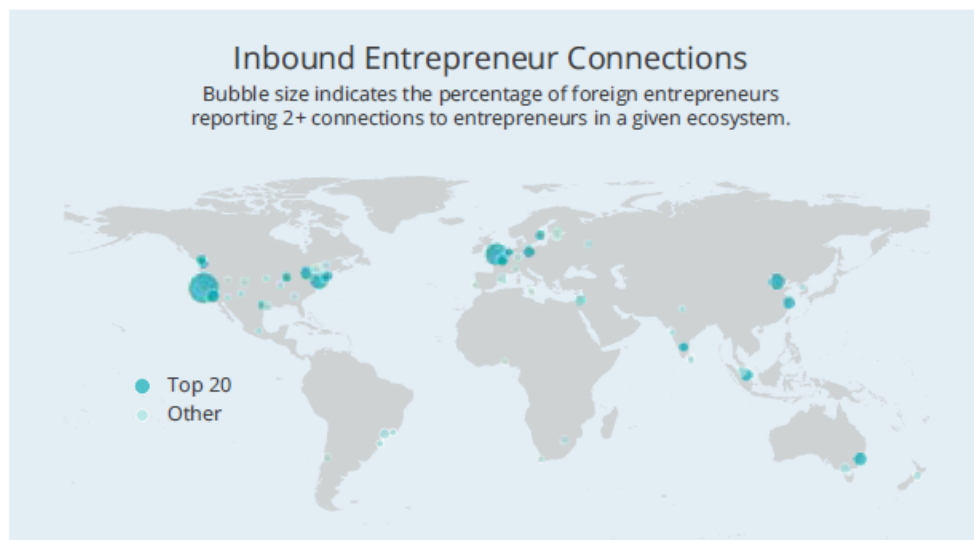


Figure 23: Startup Genome (2017)

⁴² Startup Genome (2017), “Global Startup Ecosystem Report (2017)”

⁴³ The Global Entrepreneurship Network, <https://genglobal.org/>

Startups from everywhere in the world want to connect with these three ecosystems for the benefits of accessing the most innovative advices, money and ideas.

On the other hand, looking at the “outbound” global connections (which means having high number of connections with the seven top ecosystems of Silicon Valley, NYC, London, Tel Aviv, Singapore, Berlin and Shanghai), Tel Aviv stands out as the most well-connected with the others.



Figure 24: Startup Genome (2017)

Genome Report continues analyzing which are the most connected ecosystems, dividing them by regions.

In fact, some ecosystems seem to be better positioned in terms of markets reach and connections than others, as reported in figure 25.

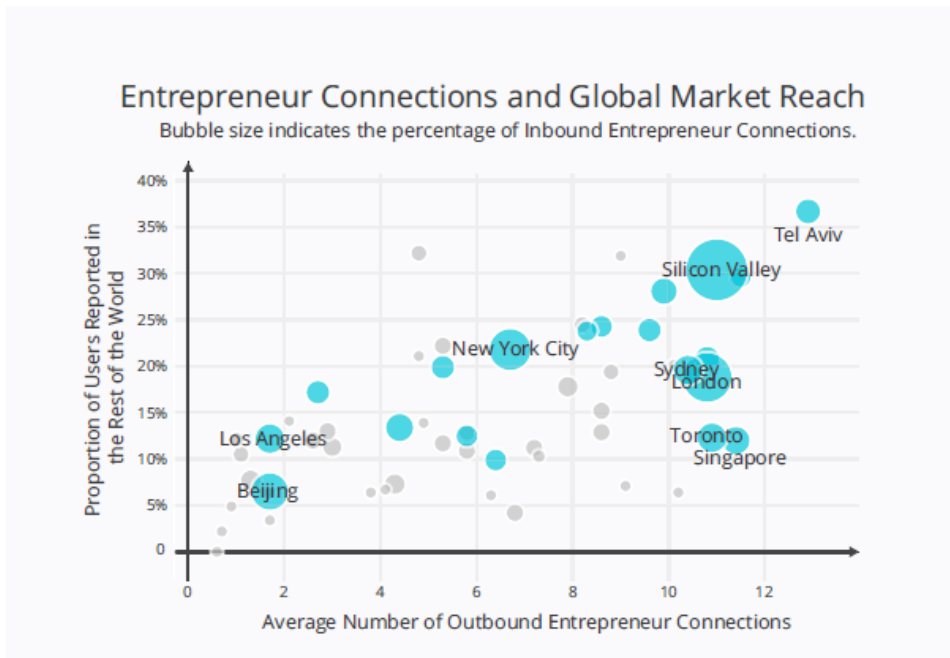


Figure 25: Startup Genome (2017)

As a global trend, the most connected ecosystems in the world appear to be those with more connections with the Silicon Valley, with the obvious exception of North America which has the majority of connections with London and Tel Aviv.

Having a greater connection with the other global ecosystems leads to higher performances. Has already discussed, ideas and innovation are spread by connections and relationships which help ecosystems becoming bigger and more vibrant.

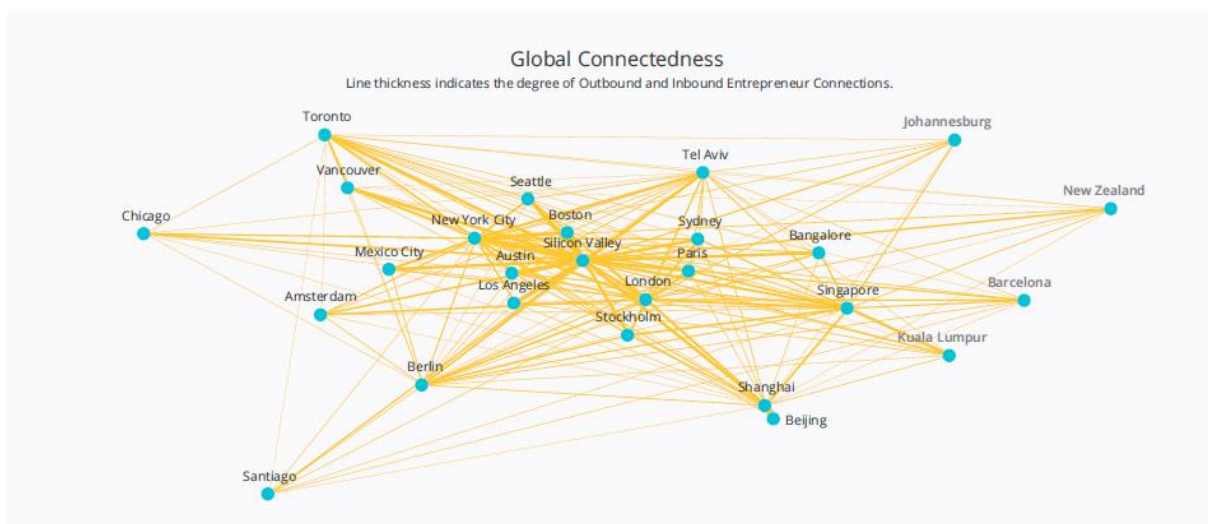


Figure 26: Startup Genome (2017)

According to *Brad Feld (2012)*⁴⁴, to build a thriving start-up ecosystem it will take about 20 years.

It is foreseen that over the next 15 years the economic value deriving from technological change will double at a global level.

Given that building a vibrant startups ecosystem seems to take approximately 20 years, there is the necessity for strong and aggressive investments in this sense if cities and region do not want to be left out of this value creation process.

The world will receive huge benefit from the creation of more and new startup ecosystem, but to do that it is necessary a combined effort.

In fact, according to Feld, including everyone is interested in joining the startups community (students, researchers, professors, corporate employees, government, investors etc.), will play a critical role in boosting startups' ecosystems potentially in any city in the world.

A lot of places have already taken steps toward this direction: learning from those places could result essential for the creation of brand new global startup ecosystems.

From a national point of view, the main objective would be increasing the ecosystem's size, so it will produce more economic value, becoming globally competitive and creating new jobs and wealth for their population.

But in the attempt of accelerating ecosystems' growth, cities and regions often tend to get stuck into mistakes and wrong habits they learnt from other sectors' industries which are completely different from those of the dynamic tech startup ecosystem.

While the majority of industries are characterized by dynamic early stages in which there is the creation of many companies and a following period of stability and consolidation, tech startups' ecosystems are by contrast characterized by companies that come and go, rapid shifts of industry's directions, rapidly changing software technology and young

⁴⁴ Feld, B. (2012), "Startup Communités: building an entrepreneurial ecosystem in your city", Startup revolution

companies that are the leaders rather than older ones, which make the startup ecosystem way more complex to manage than the others.

CH. 4 – ISRAEL: THE STARTUP NATION

After having analysed how technology innovation has shift from suburban areas toward cities, making them become the new hubs for innovation, we will focus on the particular case of Israel and more specifically of the city of Tel Aviv, which has become one of the world's leading technology innovation hubs, holding the first start-up ecosystem, in terms of importance, outside the United States.

What results to be important for the purpose of this thesis work is trying to understand how such a tiny and controversial country has been able to become one of the most creative hubs with more startups, venture capital and new technology than most of other places in the world.

4.1 - The Israeli context

In the field of start-ups, venture capital and high-tech companies, Israel undoubtedly represents the most interesting reality on the international stage.⁴⁵

The great interest surrounding this country find its roots in the incredible concentration of startups in a Nation of such small dimensions, which has always been characterized by a vibrant, unbiased entrepreneurial politics, supported by a State that promote forward-looking manoeuvres aimed at attracting investments, business incentives and bureaucratic simplifications, contributing to the creation of a unique situation in which new realities emerge and flourish very easily.

Companies that decide to invest in Israel, are able to find unique combinations of audacity, creativity and curiosity everywhere they look, which can explain why Israel presents the highest density of startups in the world: with a population of 8,5 million has more startups per capita than any other country: roughly 1 for every 2000 Israeli (that is almost 5000 in

⁴⁵ Pontillo, A. (2017), "Stato ed industria high-tech in Israele, il "miracolo" della Silicon Wadi", Lab-IP: <http://www.lab-ip.net/stato-ed-industria-high-tech-in-israele-il-miracolo-della-silicon-wadi/>

total). Furthermore, Israel ranks 10th in the *Bloomberg Innovation Index (2017)*⁴⁶ and 1st in the world in expenditure on research and development as a percentage of GDP⁴⁷ (more than 4%) and the third largest number of NASDAQ-listed companies after U.S. and China in 2016⁴⁸ (with 94 companies).

Companies are mostly concentrated within the area of the “Silicon Wadi” which takes its name from the Californian region of Silicon Valley and the Arabic word for valley “Wadi”, which is also commonly used in Hebrew. Silicon Wadi takes its name from the incredible concentration of startups, in particular in the area of the city of Tel Aviv and its surroundings, the heart of high-tech industry of the country and one of the first cities in the world in this sector. Because of this high concentration of highly technologic companies, mainly in the coastal area of the country, Israel is nicknamed the “*Start-up Nation*”.

Israel, of course, is not immune to the universally high rates of startups failures but, its culture and regulations reflect a unique attitude towards failure: Israeli show a low uncertainty avoidance and high willingness to risk-taking.

Obviously, the role of the State appears to be essential in the creation and development of this contest with subsidies loans for enterprises, bureaucratic simplifications, a straight campaign of foreign investments attraction, together with the presence of a dedicated “*Israel Innovation Authority*”⁴⁹ responsible of innovation policies of the country.

⁴⁶Bloomberg Innovation Index is an annual ranking of how innovative countries are on the basis of six criteria: R&D, manufacturing, high-tech companies, post-secondary education, research personnel and patents. Bloomberg uses data from: The World Bank, OECD, IMF, WIPO, USPTO and UNESCO.
<https://www.bloomberg.com/news/articles/2017-01-17/sweden-gains-south-korea-reigns-as-world-s-most-innovative-economies>

⁴⁷ Data from The World Bank 2017

https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?view=map&year_high_desc=true

⁴⁸ <https://www.forbes.com/sites/richardbehar/2016/05/11/inside-israels-secret-startup-machine/#597b6a311a51>

⁴⁹ Israel Innovation Authority website <http://www.matimop.org.il/>

What results interesting for the purpose of this thesis work is trying to understand how a country with 8,5 million people, lacking in natural resources, and troubled with conflicts has been able to increase its economic growth by fifty times in sixty years and becoming a hi-tech driving force.

In the course of this chapter, we will see that three main factors played a central role in this sense:

1. The adverse conditions;
2. The military industry;
3. Immigration.

Those three factors together with the central role of the government and the two important elements of technology and courage, have been able to transform a country lacking in resources, afflicted by wars and isolated, becoming one of the leading countries in the high-tech field.

4.2 – Israeli successful elements

According to *Senor and Singer (2009)* book “*Start-up Nation*”⁵⁰, the particular conditions of Israel which has always been a troubled land, have meant that this country became more skeptical toward conventional explanations about what is possible and contributed to make it a country and a population that always find new and innovative solutions without following default paths that the other countries usually seem to follow.

Since its creation Israel had to struggle with a complicated situation, nevertheless, its population doubled in the first two years of its existence and continued growing by another third during the next seven years. Furthermore, two out of three Israelis were new arrivals, many of them were refugees to whom was immediately asked to go fight. In addition to all this, the economic situation of the country was stagnant.

So, how did a community composed of almost refugees in a country with a stagnant economy, transform a desolated and dry land into one of the most dynamic entrepreneurial economies in the world?

Following *Senor and Singer (2009)*, Israel has been able to keep separated its security threats from its economic growth opportunities.

In other words, “Israeli people have the deep-seated belief that their startups are able to survive wars and unrests, a conviction that Israeli entrepreneurs have been able to transmit also to foreign and home investors”.

4.2.1. - Adverse conditions

The first main factor that seems to have played a central role in Israeli tremendous development is defined by adverse conditions. It’s difficult to understand how the Arabian boycott towards Israel and the other international embargoes have costed to Israel in the last seventy years but, on the other hand, it is also difficult to assess the value of the

⁵⁰*Senor, D., Singer, S. (2009),” Start-up Nation. The story of Israel’s economic miracle”, Twelve*

strengths that Israel has developed precisely because of the constant attempts of obstruct and undermine the economic development of the country.

Another important fact is that, Israel, because of the hostility it has with neighboring countries, has always been forced to export toward faraway markets with the obvious result of high costs of shipping and other correlated difficulties, making it adverse to large, identifiable, material goods. That is exactly why Israel has promptly turn toward knowledge and innovation-based economies once the trend started to emerge, focusing on small, anonymous components and software which are easier to be traded with faraway markets.

4.2.2. - The military industry

The second factor that influenced Israeli exceptional growth is its military industry.

Often the capacity to innovate depends on having a different perspective and this different perspective comes directly from the experience and experience in turn is acquired with age and maturity.

In Israel, maturity is achieved very soon because the society offers an incredible mixture of incisive experiences since the end of the highschool.

In fact, military service is mandatory for both boys and girls from 18 to 21 years old, where Israeli boys and girls are subject to completely different experiences from those of their peers from developed countries and they are equipped with broad-spectrum experiences which turn them into leaders concentrated on the mission and in subjects prepared to solving problems. In this way, when Israeli boys and girls get into the university, their mindset is completely different from that of their foreign peers. This implies that once they finally finish university they are in their mid-twenties and way more mature, with a lot more life experiences than their peers from other parts of the world and this then affects their perspective, making them better suited for innovative jobs.

The military industry contributed a lot in the emergence of successful companies and, more than in any other country, seems to foster entrepreneurship.

Furthermore, because of their peculiar country’s situation, they have always been aware that the future is always in question, so they take every moment as important and they are on average more risk and uncertainty lovers.

A part of the life experience Israeli boys and girls gain during their military service period, they are also more inclined to attend university once they finish their army. In fact, according to *The Organization for Economic Co-operation and Development (OECD)*,⁵¹ Israel has one of the highest levels of educated population, the intergovernmental economic organization defined a country’s education level on the basis of the percentage of people between a range of 25 to 64 years old who have completed some kind of tertiary education in the form of a two-year degree, four-year degree or vocational program, ranking Israel at the third position of the most educated countries in 2015 after Canada and Japan with 49% of 25-64 years old citizens that have attained tertiary education (way higher than the OECD average of 35%).

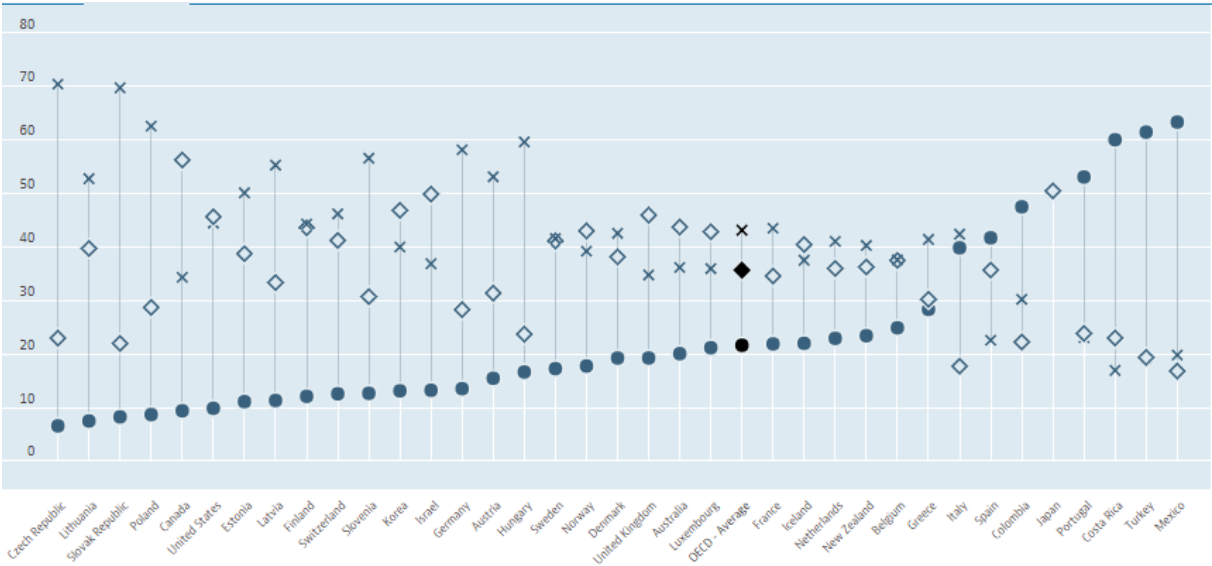


Figure 27: OECD (2016)

⁵¹ OECD, “Adult Education Level”, last update 2016, <https://data.oecd.org/eduatt/adult-education-level.htm#indicator-chart>

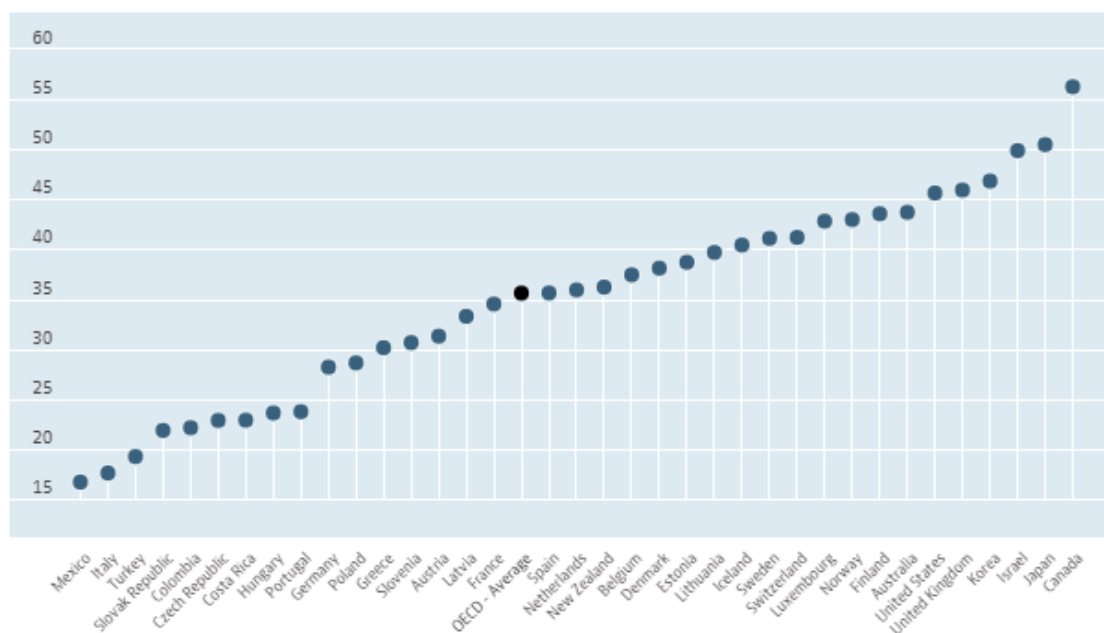


Figure 28: OECD (2016)

In addition, there are several exceptional intelligence units in Israel's military that create tech or cyber experts like, for instance, 8200 unit of IDF which utilizes the most advance technology in combat that lately can be used also for civilian scopes.

4.2.3. - Immigration

The third main factor that deeply influence Israeli success is given by immigration. "Immigrants are not averse to starting over. They are, by definition, risk takers. A nation of immigrants is a nation of entrepreneurs" (Gidi Grinstein).

Israeli population is one of the most heterogeneous in the world. One of the main reasons for Israel's economic miracle detected by Senor and Singer (2009) is identified by the high rate of immigration which has always characterized this country since its foundation in 1948.

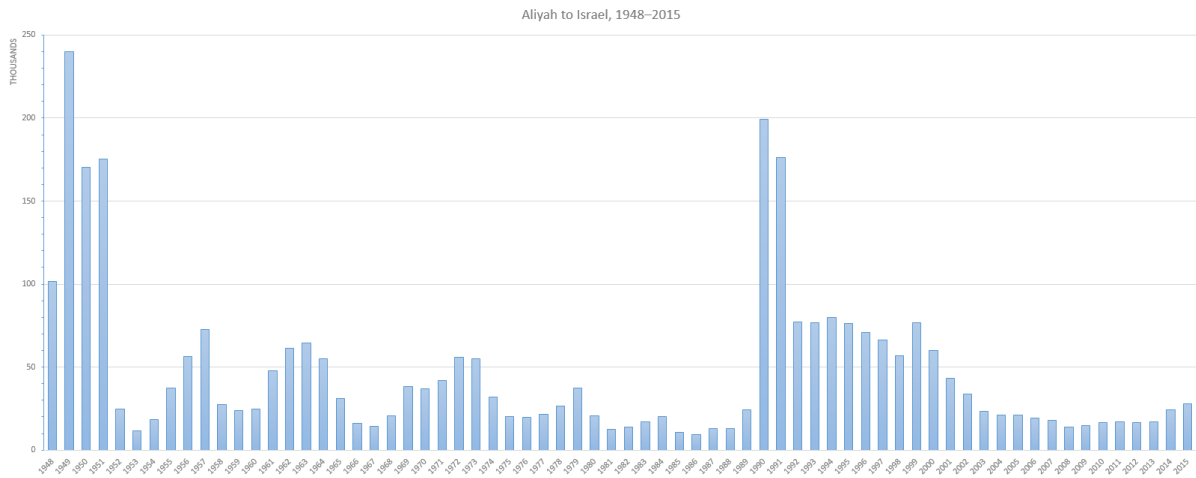


Figure 29: Central Bureau of Statistics (2016)

The image (figure 29) shows the rate of immigration for a range of time going from Israel's foundation in 1948 until 2015, highlighting two peaks of immigration's flows in 1949 (right after the foundation and the end of the WWII) and in 1990.

In addition to the mere number of immigrants or first/second generation descendants of immigrants, a key role has been played by the government that, over the years, has implemented several policies to assimilate newcomers. In fact, Israel became the first and only nation in history including in its founding documents a liberal immigration policy, which was supposed to allow every Jew to come to this country.

4.3 – Israel economy overview

In the attempt of analyzing the impact that the technology innovation sector has on Israeli economics it is necessary to start with a general overview of the country's economy, starting with a brief summary of the economic policies adopted by the Israeli's government during the years, which have enable the country to become a leading nation in terms of innovation.

The history of Israeli economics is dominated by two big leaps, separated by a stagnation period:

- I. From 1948 until 1970 → per capita GDP quadrupled, population tripled. Means used: state entrepreneurship that dominated a tiny, primitive, private sector.
- II. From 1990 until now → country transformed into a global innovation leading center. Means used: thriving private entrepreneurship first favored by governmental tools.

The first example of policy that helped the country in opening its economy to foreign investments and grow, is undoubtedly the *Yozma* program.

This program launched in 1993⁵² constituted the turning point that boosted the entry and investment of foreign venture capital in the Israeli market.

The venture capital activity in fact, is essential for both providing constant funds and giving advices together with a network of other investors, possible future buyers, new customers and partners.

For all these reasons, it results to be fundamental for startups in their early stages.

Before the advent of venture capital in Israel there were only few ways of funding:

- OCS (Office of Chief Scientist);
- BIRD (Bilateral Industrial Research and Development).

But these ways were not sufficient, and the only remedy was to turn to the private venture capital industry: that is the reason behind the *Yozma* program creation.

⁵² Yozma program <http://www.yozma.com/home/>

The idea was to establish governmental investments for 100 million dollars in order to create ten new venture capital funds.

Each fund represented by three subjects:

- 1 Israeli undergoing training venture capital;
- 1 foreign venture capital society;
- 1 Israeli investment bank or society.

Furthermore, a 20 million dollars fund was intended to go to direct investments toward technological companies.

The fund allocated 8 million for a maximum of 40% of the total investment while the rest must be added by private investors: the latter could take a call option on the allowances held by Yozma, valid for a period of 5 years at price equal to the public capital invested plus an interest rate and a percentage of the carried interest generated by the fund.

This was the main reason why the program had such a huge success: it was not sufficient the mere contribution in terms of co-investment to attract venture capitals in Israel, the real attraction for the latter was the possibility to acquire the package under governmental control only in the case in which this resulted to be effective. Basically, the State was taking the risk offering all the benefit to the investors.

The reason behind that was obviously to develop the sector.

Finally, in the 2000s Israel was invested by the global tech bubble together with one of the most intense waves of terroristic attacks in its history. In spite of that, in the global market of venture capital, Israel has not been penalized, on contrary it has doubled its value.

4.3.1 – General economic data

Following the macroeconomic framework (2017) developed by the *Italian Trade Agency*⁵³, Israel presents the following characteristics:

- Small size market → 8,5 million inhabitants;
- Geo-political constraints;
- Open and competitive market;
- High level of education;
- Highly-specialized workforce;
- Economy based on innovation and R&D (more than 4% of GDP);
- Investments and incentives toward strategic sectors.

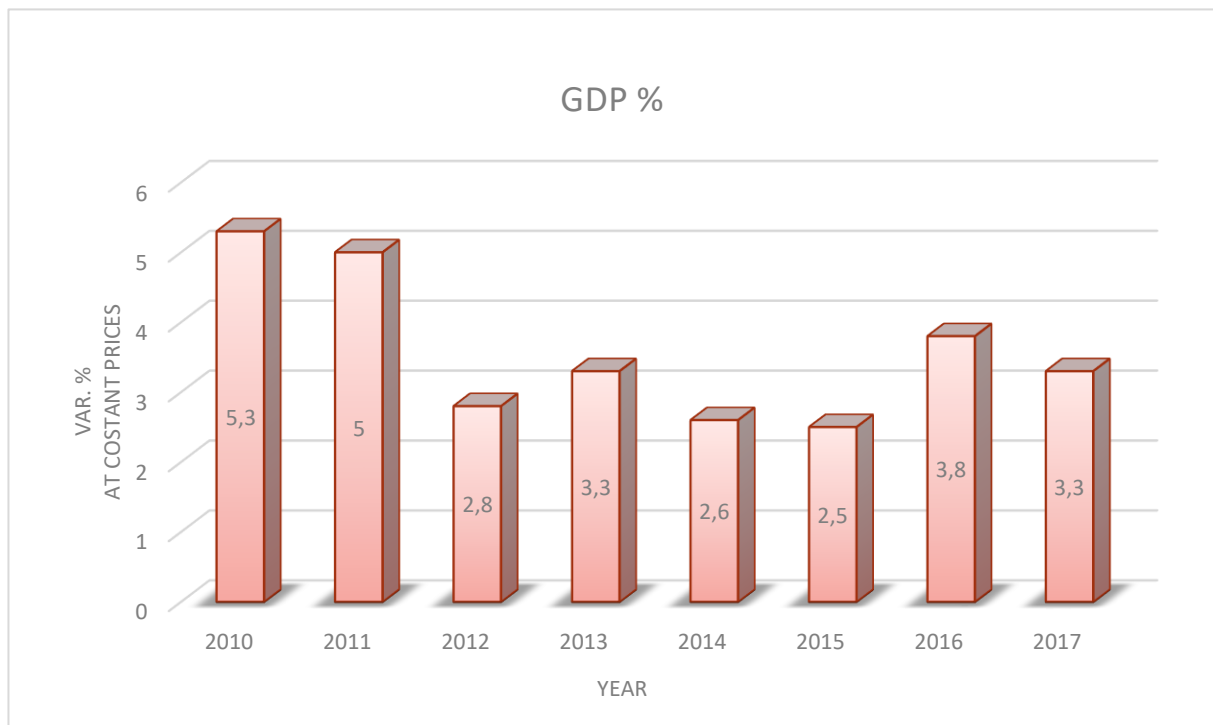


Figure 30: OECD economic outlook (2017)

⁵³ Italian Trade Agency website <https://www.ice.it/en/>

Trade Israel-World⁵⁴

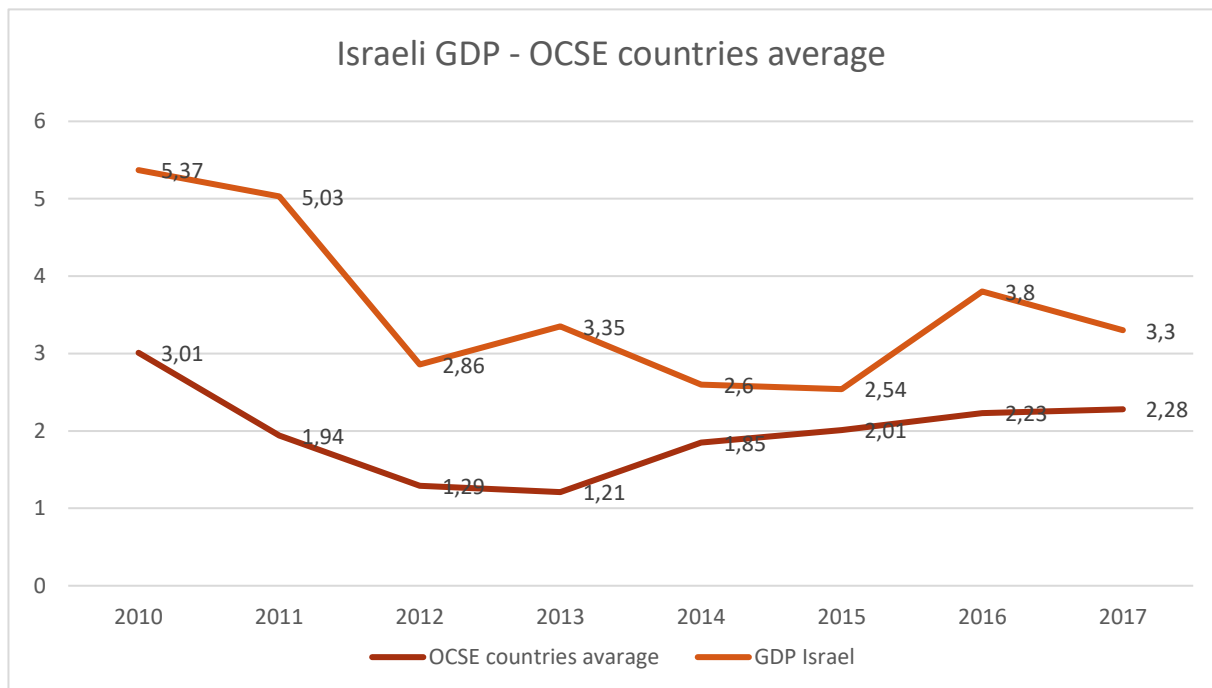


Figure 31: OECD economic outlook (2017)

Import Israel-World 2016

- Growth of 6% in comparison to 2015;
- USA, China and Switzerland principal trade partners;
- Share of imports from UE countries 41,6%;
- Italy: 8th partner with a share of 4% of the total import.

Export Israel-World 2016

- Export decreases of -5,8% in comparison to 2015 (because of the strengthening of the currency NIS);
- USA principal destination country of the export with 29,2% of the total export;
- Export toward UE countries 26%;
- Italy: 13th country with a share of 1,5% of the total export.

⁵⁴ All data taken from macroeconomic framework (2017) developed by Italian Trade Agency



Figure 32: Israeli Bureau of Statistics (2017)

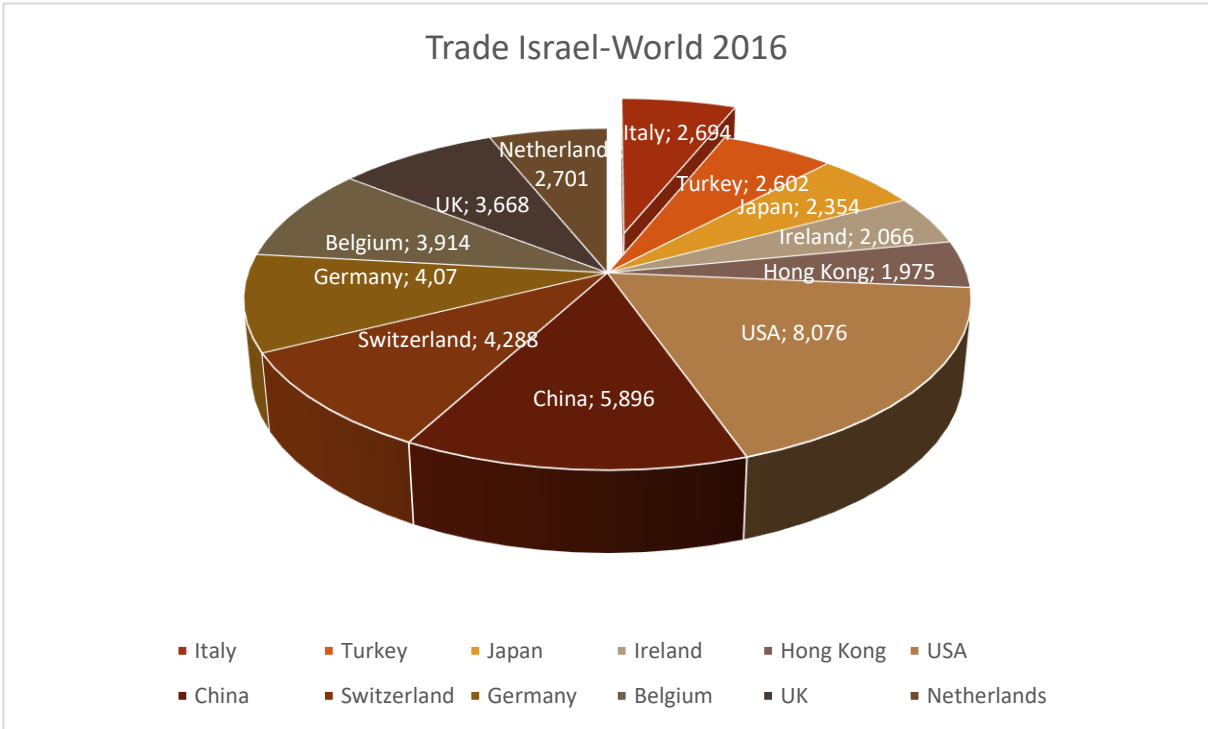


Figure 33: Israeli Central Bureau of Statistics (2017)

Israeli economics is specifically focused on highly innovative sectors such as IT & software, life sciences, cleantech, security and defense, agritech and natural gas, which are characterized by:

- Strong policies aimed at innovation;
- 1st place in expenditure for R&D as % of GDP (almost 5% of GDP);
- Investments aimed to strategic sectors;
- Deep synergies between academic research and industrial research;
- Complete internationalization of research programs;
- Policies aiming to encouraging Israeli companies to invest in R&D guaranteeing participation of the State in sharing the risks.

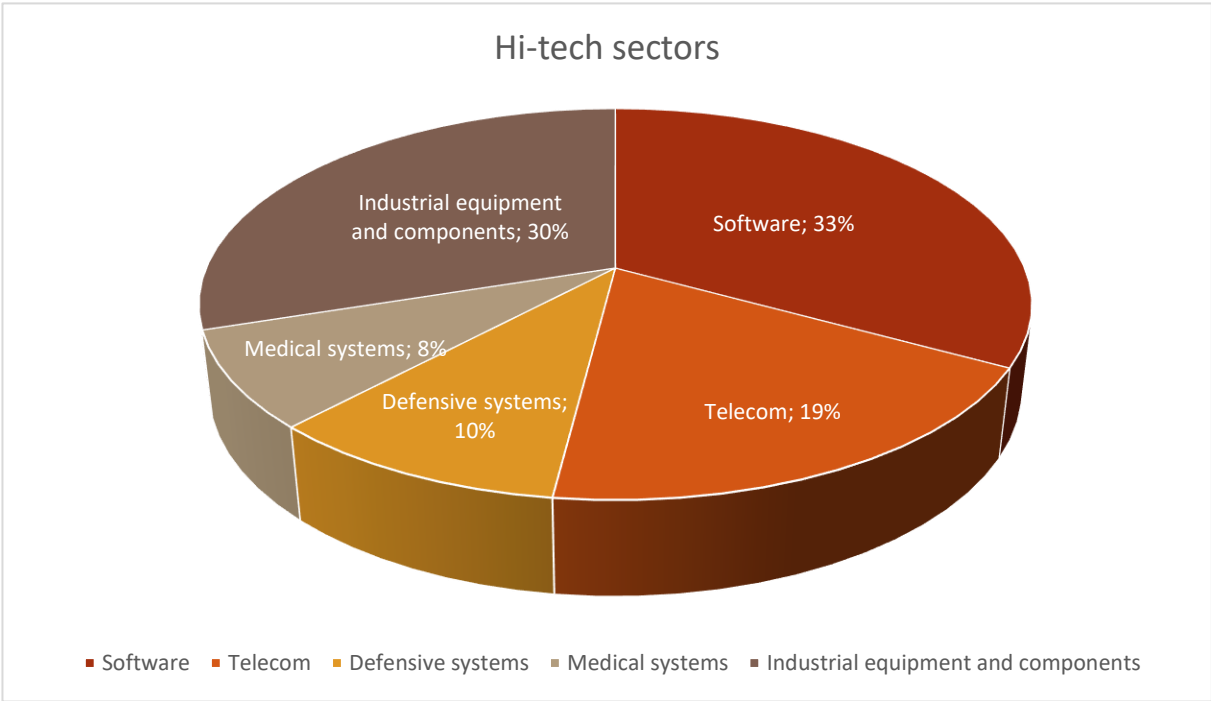


Figure 34: Italian Trade Agency (ITA) macroeconomic framework (2017)

Ecosystem and factors of scientific and technological development:

- Consolidated system for local startups with local and foreign VC's funds;
- World leader for VC per capita investments;
- Hundreds of strategic acquisitions of local startups from foreign companies;
- Multinational R&D centers: IBM, HP, Intel, Microsoft, Google, Facebook, Cisco, SAP etc;

4.3.2 - Bilateral relationship between Israel and Italy

Italy and Israel have a long-lasting relationship based on:

- Geographical and cultural proximity;
- Italy as a strategic partner for Israel to enter in the UE market;
- High-tech industrial collaboration;
- Made in Italy and Italian lifestyle very appreciated;
- Relatively open and favourable market for Italian companies.

Israel-Italy cooperation deals:

- Israel-UE deal;
- Italy-Israel R&D deal.

In US\$ million	2014	2015	2016	2017
Export toward Israel	2,785	2,490	2,694	+8,2
Import from Israel	1,095	850	950	+11,7
Balance	1,690	1,640	1,744	+6,3

Figure 36: Israel Central Bureau of Statistics (2017)

During the years, Israel and Italy have built a dense network of relations. In fact, the State of Israel has always been committed to the research of foreign investors: Italy, of course, represents one of them.

The Israel Trade and Economics Office of trade and Investments promotes foreign trade within the Minister of Economics, taking care of the management and coordination of International commercial politics of the country.⁵⁶ Not only this office manages a completely Italian language website which offers business opportunities for Italian

⁵⁶ Pontillo, A. (2017), "Stato ed industria high-tech in Israele, il "miracolo" della Silicon Wadi", Lab-IP: <http://www.lab-ip.net/stato-ed-industria-high-tech-in-israele-il-miracolo-della-silicon-wadi/>

entrepreneurs and investors, but it also makes it easier to promote Israeli business internationally.

The Foreign Trade Administration, in addition to all the global missions, works to develop strategic bilateral partnerships, identifying new collaboration opportunities in the business world and in the trade with Italy fostering the creation of strategic co-operations between companies, organizations and governmental agencies of both countries, in both public and private sectors.

The 11th of July 2016, Enel launched in Tel Aviv its innovation hub, being the first Italian company establishing a pole of such dimensions in Israel.

Enel Innovation Hub aims to create a scouting work with the aim of identifying 20 high-potential Israeli start-ups every year, offering them a program of support dedicated.

Another important step that has been taken between Israel and Italy in the attempt of improving their economic relationship, is marked by *the Intergovernmental Agreement of Industrial, Scientific and Technological Co-operation* which entered into force in 2002.⁵⁷

The agreement, signed in Bologna the 13th of June 2000, resulted to be an essential tool for the development of the two countries' relations in the field of research and industrial development. It has favoured a single framework of the future initiatives that have arisen in the course of the next years, favouring the emergence of numerous bilateral projects.

During its first sixteen years, the project has benefited from over 15 million euros in total, giving rise to:

- 115 R&D projects;
- 58 basic research projects;
- 145 bilateral events;
- 9 joint laboratories.

⁵⁷ Data and information taken from the Italian Embassy in Tel Aviv, Israel.
https://ambtelaviv.esteri.it/ambasciata_telaviv/en/

4.4 - Tel Aviv: startup city

If Israel represents a peculiar case in the technology innovation environment, the majority of the credit has to go to Tel Aviv.

The “Nonstop City” in fact, has always been the driving factor of the Israeli incredible development.

Tel Aviv was founded in 1909 by Jews right outside the ancient port city of Jaffa (or Yafo in Hebrew). It is the second most populous city in Israel after Jerusalem with a population of 438,818 and a density of 8468,7/km²,⁵⁸ and the most populous city in Gush Dan (Israel largest metropolitan area), located on the country’s Mediterranean coast line, which is also known as the Silicon Wadi for the tremendous concentration of startups that make this area comparable to Californian Silicon Valley.

The name Tel Aviv derives from the Hebrew words “Tel” which means hill, symbolizing the mad-made mound accumulating layers and “Aviv” which means spring, symbolizing renewal.

Tel Aviv is a global, cosmopolitan city which has been ranked 34th in the *Global Financial Centres Index*⁵⁹. Tel Aviv has the third largest economy in the Middle-East (after Abu Dhabi and Kuwait City)⁶⁰ and the 31st highest cost of living in the world.⁶¹

If the capital of the country is Jerusalem, the capital of startups is undoubtedly Tel Aviv. With an ecosystem of 2200-2700 startups in the hi-tech sector, Tel Aviv has one of the highest densities of start-ups in the world.

Over the last 40 years, roughly 250 Israeli companies have gone public on Nasdaq, the majority of them based in Tel Aviv: only USA and China have more companies listed on Nasdaq nowadays.

⁵⁸ “List of localities in alphabetical order”, Israel Central Bureau of Statistics, retrieved 26 September 2017, <http://www.cbs.gov.il/ishuvim/reshimalefishem.pdf>

⁵⁹ Yeandle, M. (2015), “The Global Financial Centres Index”, Long Finance, http://www.longfinance.net/images/GFCI18_23Sep2015.pdf

⁶⁰ Global City GDP. Brookings Institution, 2014 <https://www.brookings.edu/research/global-metro-monitor/>

⁶¹ Sedghi, A. (2012), “Which is the world’s most expansive city? Cost of living survey”, the Guardian

Startup Genome, in its last Global Startup Ecosystem Report, has ranked Tel Aviv at sixth place of world’s startup ecosystems.

2017 Global Startup Ecosystem Ranking

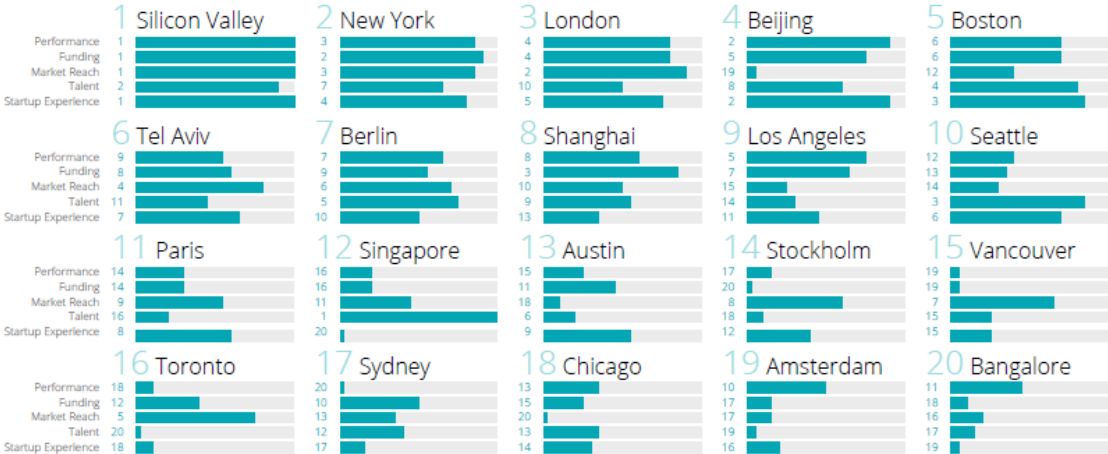


Figure 37: Startup Genome (2017)

Even if Tel Aviv is a tiny city in comparison to the other global cities’ hubs, such as New York City or London, it presents all the necessary distinguishing hallmarks of a global tech ecosystem leader:

- education;
- entrepreneurial spirit;
- technology;
- global mindset;
- government support;
- 300 multinational R&D centers operating in Israel.

Tel Aviv loses only one spot from the previous report, remaining in the top ten as one of the top startups ecosystems in the world. In fact, Tel Aviv is particularly good in reaching markets, which is central characteristic in the growth and development of startup

ecosystems, with good connections with other global ecosystems and a pool of foreign customers and buyers; furthermore, Tel Aviv has strong funding numbers.

Tel Aviv has the highest rate of early-stage startups (1450 only within the city and 2800 considering greater Tel Aviv in 5000 of the entire country) and the highest rate of startups per capita with roughly 1 every 290 citizens, together with the highest rate of accelerators, co-working spaces and innovation centers per capita in the world.⁶²

Due to the small size of the city (as the size of the country), and the unlikelihood of their neighbor markets to utilize Israeli technologies, Telavivians startups are forced to born global with an international mindset.

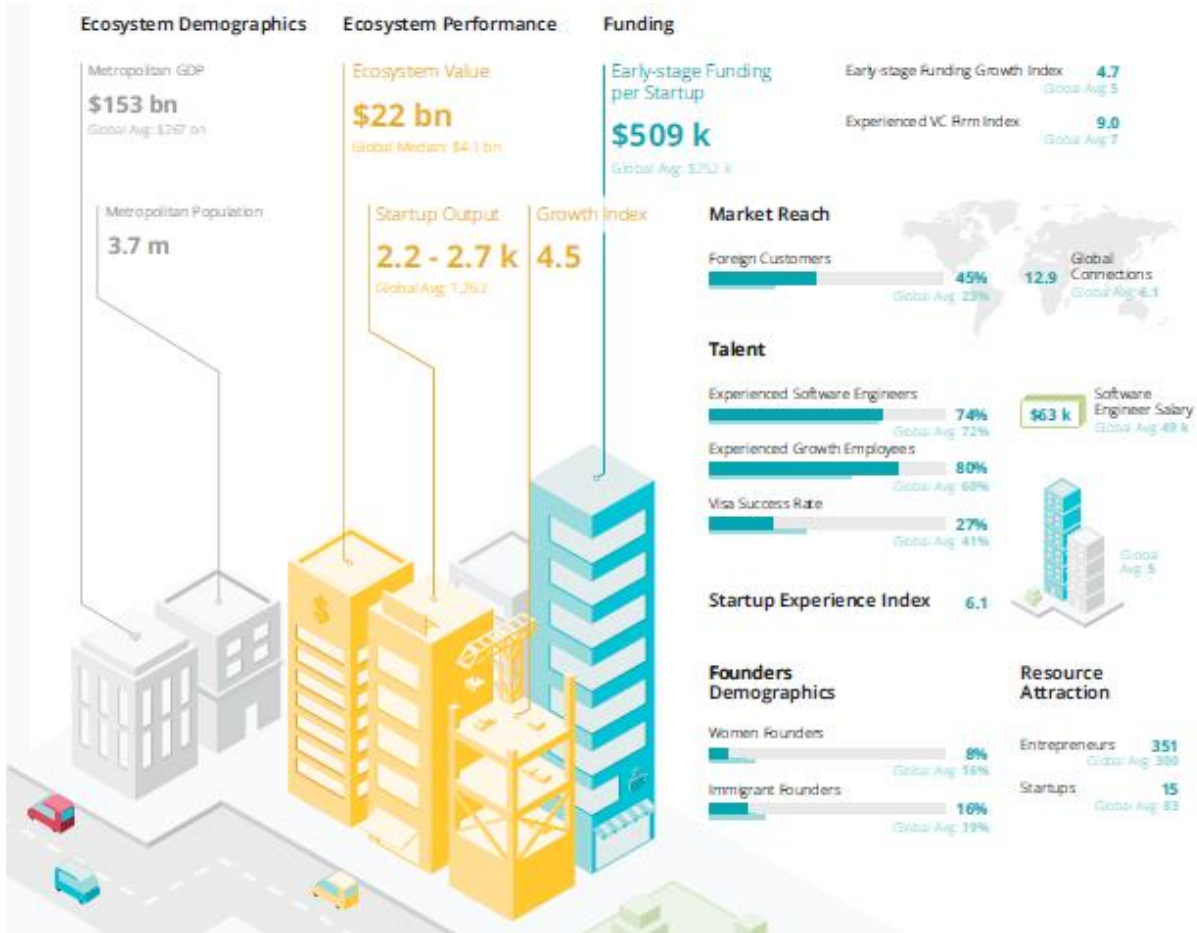


Figure 38: Startup Genome (2017)

⁶² Tel Aviv Nonstop city (2016-2017), "Tel Aviv start-up city", ,tel-aviv.gov.il/eng

So, why is Tel Aviv so innovative and entrepreneurial?

The most obvious and general answer consists in the tight proximity of universities, companies, startups and a well-developed ecosystem of suppliers, consumers, mentors, engineering talents and venture capitals, that is able to connect them effectively.

All this helped by a fundamental role of the military for what concerns the development of advanced technologies utilized also for civil uses.

All these elements are not sufficient alone to explain the great success of Tel Aviv: the unusual combination of cultural attributes seems to be the main reason.

Many aspects that seem contradictory, like the fact that Israeli are both ambitious and collectivists, make sense when we think about the fact that every Israeli go through the military, learning that you must complete the mission and that you have to do this in team.

In addition to teamwork, they learn leadership and mission-oriented skills.

But also, the military factor is not able alone to explain this uniqueness, otherwise also other cities in countries where military is mandatory would have had the same response.

We have to remember that innovation, unlike natural resources, is a renewable resource that can spread around and benefit everyone, everywhere in the world, despite the natural resources availability or difficulties of the country. Of course, on the other hand, everybody wants to reach the maximum benefit from it and major companies from all over the world have understood that the simplest way to do it is not trying to duplicate the business environment like the one of Tel Aviv, insert in a country like Israel, but rather buying local start-ups and set up a start-up R&D centre there.

In fact, in a world that is ever-changing, innovation become the key for long-term competitiveness.

In conclusion, there are a lot of factors working together in making Tel Aviv one of the most innovative and entrepreneurial city in the world and the simultaneous presence of all of them seems to be the key of Tel Aviv's success.

4.4.1 - The Floor case

The time spent in Tel Aviv, at the end of 2017, has given the chance to enter in contact with a relatively new reality in the startups ecosystem's landscape of Tel Aviv: *The Floor*.



The Floor is a project born in 2016, in Tel Aviv, by the will of four big international banks: The Royal Bank of Scotland (RBS), HSBC, Banco Santander and Intesa Sanpaolo.

The project was born with the aim of being a common ground for FinTech startups and international banks to meet and exchange information and advices, due to the increasing interest of banking and financial systems in technologies that may serve them and their clients.

The hub, which is located in Tel Aviv's Stock Exchange, includes a collaborative workspace for FinTech startup companies together with the access to financial institutions and investors in the field, professional mentors and international connections.

The author of this thesis had the opportunity of visiting The Floor and make an interview to *Dani Schaumann*, the Globy Country Advisor of Intesa Sanpaolo and Board Member and Treasurer of the Italian Chamber of Commerce in Tel Aviv, who gave a big contribution to the understanding of those realities and the Telavivian hi-tech environment which resulted extremely helpful for the drafting of this thesis work.

Schaumann professional experience started with asset management and investment management brought him to be first, CEO for the Zurich Investments and then, deputy CEO for Asia and Emerging Markets at Pioneer Investments, before moving into Israel to find new professional opportunities, this time in Management & Acquisition, with the aim of trying to bring Italian companies to buy Israeli technologies.

Once he went to know of all the opportunities offered by this tiny but dynamic country, Schaumann decided to collaborate with Intesa Sanpaolo because of an emerging opportunity in the FinTech field: The Floor.

That is how Intesa Sanpaolo became one of the four founding banks of the project together with the Royal Bank of Scotland (RBS), Banco Santander and HSBC.

What came out from this interview with Dani Schaumann and the visit at The Floor's headquarter is an interesting point of view that together with the general experience in the city, gave the possibility to come up with an overall picture of Tel Aviv's startup ecosystem.

The idea behind The Floor's project was that of having a mutual benefit deriving from a collaboration between the international banks and the Israeli startups: for the founding banks the benefit derives mostly on the possibility to have access to a huge quantity of fintech startups from which taking the technology innovation, and for startups to have the chance to access the international market through this collaboration with the international founding banks.

For startups, being able to access the international market, is a great opportunity they could not have without this hub collaboration and of course, the possibility to say that they work for an international bank works has a good reference for them.

Startups entering The Floor seek mainly the openness to the world. In addition to all the feedbacks they receive when they arrive at The Floor presenting their proposal, they receive important indications from all the qualified people of the founding international banks, which eventually work as mentors for them. So, they receive important suggestions and when the bank decides to work with them, it will also transfer a lot of know-how to the startup.

Therefore, The Floor is a hub, a meeting place between companies and startups (so, not an accelerator) where the most important thing is the encounter between supply and demand that helps suppliers working in the right direction to meet the demand.

The main reason for Intesa Sanpaolo to participate in this project was the possibility to find the best solutions the market could offer, and innovation plays a fundamental role in this sense; Tel Aviv, on its side, offer the best startup ecosystem.

Furthermore, the informal nature of Israeli people means that everything comes easily: the tiny dimension of the city cause that developing a network and develop relations become easier.

According to Schaumann, the same results would not be possible to be reached by Intesa Sanpaolo without this participation in The Floor project.

Another important point that came out from this research relates to the most common errors startups do when they have to present themselves.

The most common pitfall is that everyone is in love with its innovation, but they lack in experience, often they do not know the market and they are not able to propose themselves. For instance, when startups have to do a presentation, they talk 95% of the time about their innovation avoiding showing how the investor could use it or propose it to the market: they are technicians not managers. Most of the times they are not able to enhance their discover because they lack in competences such as management, marketing and administration. That is the reason why Intesa Sanpaolo offer a startup initiative in which it selects 6/7 startups and provide them a training course about how to present their technology.

In conclusion, the key of The Floor's success is undoubtedly the internationality and the management's competence. So, the capacity of being adaptive, having an international vision, long-term vision and creating long-term local and international relationships were undoubtedly keystone of the project.

4.5 - Final considerations

Israel has always been a country harassed by political problems throughout all of its history: Israelis could not even travel to neighbouring countries.

But all these limitations were exactly the reason behind the international mindset of Israeli companies, which have always been forced to export to far away markets and direct companies toward technology, software and communications which, for their very nature (intangible products) are easier to trade globally without involving too high costs of transportation because of their characteristic of being borders transcendent.

The Israeli case is not only useful to create companies and entrepreneurial opportunities, but it results to be useful also to policymakers who want to boost their own country's startup's ecosystem.

According to *Bloching and Leutiger (2016)*, among the main factors contributing to Israeli success we can number:⁶³

- *Build brain power,*

Israeli have been able to leave aside their disadvantaged position in terms of resources lack, climate and geographic position, and focusing on education and research dedicating huge investments in R&D sector and university from which they have benefited greatly;

- *Improve immigration and integration policies to help build entrepreneurship,*

the nation is a multicultural melting pot coming from 70 different nations. Immigrants have always constituted a resource for the country rather than a threat and, for this reason, it has always been helped and encouraged by governmental policies;

- *Embrace risk, accept future,*

⁶³ *Bloching, B., Leutiger, P. (2016). "Lessons from the Start-up Nation. How global companies are tapping into Israeli's innovation pipeline and what other countries can learn". Roland Berger GMBH*

the love for the risk seems to be part of this country's DNA which, because of its controversial history, has always had to struggle with uncertainty, developing a great willingness toward taking risks;

- *Focused incentives and smart regulation support for innovators,*
the government has always supported entrepreneurship with focused incentives, favourable taxation and huge R&D investments
- *Turn adversity into advantage,*
Israel has been able to exploit its disadvantaged position in terms of natural resources and precarious security environment, compensating with creativity, innovativeness and founding new solutions.

The critical difference between Israel and other places, highlighted during the period of permanence and research spent in Tel Aviv at the end of 2017, lies in the fact that in this country, but in particular in the city of Tel Aviv, there is a huge quantity of highly specialized boys and girls (the reason why 350 multinationals set up there their R&D centers), deriving from highly specializing universities and military units.

This high specialization has been promoted by the government through a lot of investments in R&D, highly technologic sectors and innovation, and has been reinforced by the particular characteristics of this country that, for its lack in natural resources and the difficult relations with its neighbor countries, has always been forced to concentrate its efforts towards intangible and easily transferable items with the logical consequence of a tremendous specialization in the high-tech sector.

The availability of such impressive number of highly specialized young people has had the consequence of attracting foreign investments along with the internal ones and a huge number of foreign companies that decided to establish their R&D centers in this area, boosting the positive flow that entices Israeli boys and girls to concentrate their studies in technological field and, eventually, start a start-up.

But more than that, young people are also attracted from all the side aspects offered by this dynamic city like a multicultural and openminded population, music festivals, art events, cafes, clubs and other meeting places in general which, together with the high availability of job opportunities make Tel Aviv the most attractive area of the country.

While in Italy the mindset is still parents who want the children to become doctors or work in a bank for life, in Israel you find parents that want their children to work in a startup.

The mindset is completely different: making mistakes and failing, is considered part of the life and not source of shame. That is because failing implies having tried and having tried implies having developed more experience in the field.

Therefore, it is the entire ecosystem which is favorable for the emergence of startups.

Obviously, every country is different, it is unlikely to re-create the same ecosystem as Israel's in another place, but what is possible to re-create are the conditions to develop a flourish and well-connected startup ecosystem, taking into consideration the important lessons learned from this particular State but adapting them to the home country's conditions.

Starting with investing in highly technologic sectors, encouraging and enabling universities to offer innovative courses, responsive to the needs of a changing world increasingly focused on digital, making students more openminded, international and prepared for an even more globalized future. A good example of that in Italy is H-Farm, the digital platform which enable young talents to launch their innovative initiatives and support companies during their digital transformation.

The world is tremendously moving toward the high technology direction, each country and city should follow this trend that is recognized bringing with it extensive advantages both in the economic growth and employment. Looking at leading examples like Israel's and especially Tel Aviv's, appears to be fundamental for the development of a sustainable startup ecosystem.

CONCLUSION

This thesis work has committed to present the issue of start-ups and the role they have in shaping in a positive way the environment in which they are inserted, through job-creation and technology innovation development, creating a series of side-effects which enable the ecosystem to grow and generate positive spillovers for the region and society as a whole.

In the attempt of delineating how start-ups are able to play a key role in economic systems' development, an excursus of the general theme of start-ups has been made along with a deepening of the seed accelerators phenomenon which, more than any other tool, seems to be useful in helping early-stage start-ups offering them all the necessary means and aids they need to sustain themselves, develop and grow.

The overview of the subject in question has then continue with a focus on the central role cities have started to have, becoming the new hubs for technological innovation, thanks to their capacity of condensing all the successful elements of technology parks such as work spaces, mentoring, capitals and people, with city's specific elements such as cafes, festivals, art shows and other informal places where people can meet and exchange ideas, all in the same small area.

Finally, the last chapter has analysed the specific case of Israel, and in particular of the city Tel Aviv, as one of the leading countries in the high-tech sector, seeking to discern the complex motives that form the basis of Israel's incredible success and how could other countries or cities try to take a leaf out of Israel's case, in the attempt of building a successful startups' ecosystem in their home countries, with the aim of boosting innovation and create a big sustainable ecosystem capable of generating jobs and support economic growth.

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