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How incubators and accelerators are working? Evidence from Spain



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Introduction

Entrepreneurship provides a crucial pathway to economic, technological, and social growth and development (Zahra & Wright, 2016). The economic value of entrepreneurship can be categorized by creating more employment, increase the rate and development of innovation and productivity growth (Versloot & Van Praag, 2007). In Europe according with the OECD (2017), the survival rate of startups was 58% before 3 years and about 44% before the 5 years of life. Incubators are a way to promote innovation and reduce the high start-up failure rate (Lalkaka, 2003).

However, entrepreneurship is still considered to be anomaly in most European countries making this one of the biggest challenges for many economies. As entrepreneurs require capital for developing their ideas but with lack of tangible assets and negative earnings, searching for bank loans or debt financing is almost useless (Gompers & Lerner, 2000). New ventures not only need new and innovative financial sources but also training and knowledge transfer in order to develop a sustainable business model.

In consequence, the organizations that provide support through physical or intangible services to entrepreneur projects and new ventures have acquired more relevance every day (Viglialoro et al., 2020). New equity finance like venture capital (VC), corporate venture capital (CVC), angel investment, crowdfunding, and/or accelerators (Drover et al., 2017) are some ways where entrepreneurial projects can find leveraged in terms of finance and knowledge.

It has been found that incubators and accelerators impact positive in terms of growth and survival rate of new business (Colombo & Delmastro, 2002; Aerts et al., 2007; Schwartz, 2009). In 2002, the European Commission showed that 80% of incubated firms were able to survive the first 5 years of life. Incubators in Europe are growth in a non-profit culture and there is a challenge to increase the number of incubators related with the fast-growing companies which ensure the most added value and jobs (Aernoudt, 2004).

Spain is one of the European countries that is starting to be consolidated as one of the most important entrepreneurial countries in the region. Not only because its' economy is growing but also because since 2014 the number of new enterprises also started to grow,

a phenomenon that is highly related to the increase in the number of incubators that started in 2012 (Funcas, 2019).

Day by day, it is more important to understand and evaluate the entrepreneurial trends in Europe, especially in countries like Spain that play an important role in the European Union economy. The main objective of this work is to continue the job done in the past years by the team of Social Innovation Monitor (SIM) in Italy and transfer it to Europe particularly, in Spain. The emphasis is to do depth analysis of the results obtained by Spanish Incubators in 2019. Secondly, it is proposed to map the Spain territory with all the studied Incubators. Finally, it is going to be done an analyze the performance of Spanish startups incubated during 2019 by studying and comparing their results.

The information needed for this study was collected with a list of 215 incubators widely distributed in Spain until December 2018 and by sending in 2019 a specially created survey to all the Incubators with a response rate of 20%. The survey closed with a total of 43 out of a total of 215 incubators active in Spain in 2018. The work is structured as follows:

Initially, it is described the incubator phenomenon, the services offered, and the benefits generated according with the different types of them. It is going to be done a generally description about the Spain reality and the evolution of the concept in this country.

The literature analysis will be followed by a description of methodology proposed by the research: updating of the incubators' database, the creation of the questionnaire and the process of data collection.

Then, the analysis of the collected data and the most important results are highlighted in this chapter. Subsequently, an analysis of the Spanish Incubators and incubated firms' reality is proposed.

The last part of the thesis includes an overview of the theoretical and practical implications according with the main results of the research. Finally, the document will be concluded with the conclusions, limitations and suggestions for future studies and researches.

1. Literature review

1.1. Incubation Concept

The concept of incubation has been related to many disciplines. It was born in the ancient Roman and Greek cultures, where it was used as a practice with the purpose to get a vision on how to overcome a disease. Over time, incubators develop into a place where prematurely born infants are helped to survive in controlled conditions (Aernoudt, 2004). In the case of business disciplines, this concept refers to the fact that start-ups need aid in order to overcome many difficulties in their early development such as knowledge, financial resources, technology, and networking that are some causes of failure for them (Cantamessa et al., 2014). The incubation is then, the process where incubators aid young firms or projects during the initial period where they are most susceptible to failure, encouraging entrepreneurship and support startup companies in the development of innovative products and services (Aernoudt, 2004). Some other authors define the incubation concept as an effective way to connect technology, capital and know-how with the aim to impulse entrepreneurship, accelerate the development of new companies and the speed of development and exploitation of technology (Grandi & Grimaldi, 2005). Not only do they create a favorable environment and microclimate, but they also provide the right nutrients and care (Deutschmann, 2007).

It is important to start this work defining the concept of incubation as it may be confused with other terms. Particularly, it has become part of the common vocabulary and its use can cause misunderstandings. Nowadays, it has becoming a fashionable subject, the authors tend to adopt it for very different uses and far from its true meaning (Aernoudt, 2004).

1.2. Definition of incubators

The definition for incubators is very complex as the term has been used for many types of organizations with different objectives, activities, and services that have to be taken into

consideration in order to evaluate or study them (Aernoudt, 2004). The models of incubators are continually evolving because there are new business models and market needs that make the services offered by incubators more specialized (Grandi & Grimaldi, 2005; Klofsten et al., 2020). For example, the screening process demands unique practices as there are specialized incubators (Aerts et al., 2007) and their financial needs for each type of incubator is special as well as how they relate with their different sources of financial resources (Aernoudt, 2004).

Some of the definitions of incubators are presented below: they are organizations around the world that help to create and accelerate new business. They support these new ventures with the objective that later they become self-sustaining ventures (Bruneel et al., 2012). “Incubators guide starting enterprises through their growth process and as such constitute a strong instrument to promote innovation and entrepreneurship” (Aerts et al., 2007).

In general, incubators are organizations very important for entrepreneurial ecosystems that provide different types of services in order to help new ventures. In this way, they also constitute instruments for policymakers seeking to guide the social and technological progress of regions and societies (Pauwels et al., 2016). In the case of this research, the definition adopted is an organization that actively supports the process of creating and developing new innovative businesses through a series of services and resources offered either directly or through a network of partners (Sansone et al., 2020).

1.2.1. Incubators and accelerators

For some authors, the concept of incubator and accelerator are the same as they use it to refer to the same type of organization; whereas for some others, they are different organizations as, according to them, have totally different practices. Accelerators are organizations that provide incubation services to new ventures in order to accelerate and improve their business model. They are recent organizations that operate as a new generation incubation model that focuses more on intangible services. They can be identified because first, they do not offer as a primary service physical resources for a long period of time; second, typically they offer a pre-seed investment in exchange of equity; third, it's more connected to business angels and small-scale individual investors and less

to venture capitalist; fourth, the accelerator put an emphasis on business model development and try to develop investment ready-business by mentoring sessions and network opportunities; fifth, as the accelerator model offer more intensive services the tenant time is limited (on average 3-6 months) (Pauwels et al., 2016).

Other authors emphasize that accelerators are different from incubators as they provide their services for shorter periods of time, the new ventures enter and exit in groups, many of them are private and take equity stake from their tenants, the program education is more intense and wider and, finally, the number of experts and meetings are higher as the networking is one of the principal components (Cohen & Hochberg, 2014).

However, both incubator and accelerator have the same aim and the emphasis of this research is not to enter in this discussion, both concepts are going to be taken as the same one.

1.2.2. Incubators history

The type of organizations of incubators have also changed among the years starting from 1959 in New York where the first incubator was created (Aernoudt, 2004). Many authors split the phenomenon into three generations of incubators. For Bruneel et al. (2012), the first generation of Incubators offered basically infrastructure and facilities for their tenants so they can focus on the core activities of their business. As innovation and technology become the drivers of the economy, new ventures started to need more than space and facilities. Incubators became a tool to promote the creation of new technology-intensive companies. The second generation of Incubators offered business support, coaching, and training. All intangible services that help the tenants to develop their business. The third generation of Incubators emerged during 1990s providing services through external networks, which provides the tenants with access to investors, suppliers, potential customers, and technology (Bruneel et al., 2012).

For Pauwels et al (2016). the first generation of incubation focused on providing physical and financial resource support. The second generation, that started on the nineties, offer more intangible services such as access to knowledge, product development support, access to entrepreneurial and financial networks. Finally, there is a new generation of incubation model that is focusing even more on intangible services. The accelerators have

been recognized as this new generation “that aim to accelerate successful venture creation by providing specific incubation services, focused on education and mentoring, during an intensive program of limited duration” (Pauwels et al., 2016).

Older generation BIs have updated their services in order to cover current necessities of start-ups. Consequently, there are no big differences across generation in terms of services offered. Tenants on the third generation make full use of the portfolio offered and older incubators tend to select older tenants and allow them to stay longer. The lack of selection criteria and exit policies cause an incongruity between services offered and tenants’ necessities (Bruneel et al., 2012).

1.3. Types of incubator

As there are many definitions of incubators there are many different approaches to study the different incubator types. One first approach is to classify them according with their sponsors/stakeholders or objectives (Aernoudt, 2004):

- 1) The first type is the varied incubators in which all kinds of enterprises from low-tech to non-tech receive help. It was the very first type of incubators and its objective is to impulse or reactivate the economy through the creation of start-ups and in consequence the employment creation. Many sectors are involved from manufacturing to services.
- 2) The second type is the economic development incubators that use the incubator with the aim to improve regional competitiveness, create jobs and improve the regional disparity gap. Creating regional contacts to support entrepreneurship leads to the creation of regional incubators such as university incubators or technology parks.
- 3) The third type is the technology incubators which are more focused on the development of technology-oriented firms. The main objective of these organizations is to promote the creation of new companies as well as new technologies and innovation. The sectors engaged are involved in a wide selection of technological areas.
- 4) The fourth type is the social incubator whose purpose is to aid companies where people with low employment capacities can work. The main objective is to reduce the social gap by helping firms with a social oriented perspective to create jobs.
- 5) The last type of incubators is the basic research incubators that tries to mature ideas until the moment they are ready to be introduced into the market. The objective is that ideas get into the incubation model and when they are ready, they can be transformed into intellectual assets that can be licensed or sold.

On the following section, it is going to be explained some types of incubators that have been more studied and finally it is presented the division model that is going to be used.

1.3.1. Corporate Incubator

A corporate incubator is one type of incubator and it is created by an organization that has a core business different from just support entrepreneurship. The type of organization can be any type of organization, including nonprofit organizations. Some authors related this type of incubator to established companies that have company-supported programs and guide startups by providing services such as mentoring, facilities access, education, networking, and financial aid. The main idea, for this type of organizations, is to support startups that receive help to improve performance, and corporations receive assistance to search for innovation (Kohler, 2016). Usually corporate incubators offer facilities, knowledge, capital and all the needed tools to accelerate business processes in exchange of acquisition rights. In other words, they try to sum forces to increase their R&D activities (Waltz, 2008).

However, as it was said before, many types of organizations can establish a corporate incubator. Corporate accelerators are programs sponsored or managed directly by one or more established firms. There is an enormous variety of corporate startup engagement models. Due to the dependence of corporations, incubators tend to specialization creating competition to recruit best startups (Moschner et al., 2019).

As corporate incubators are a way to reduce the gap between corporations and startups there are many different ways how the engagement between these two actors is made. In order to achieve mutual benefits, companies and startups should seek for the type of engagement that might be more accurate according with their strategies and objectives. Following, it is expose some of these models of engagement (Kohler, 2016):

- 1) Corporation supports pilot project: A corporation fund projects developed outside of the company rather than produce or develop them internally allowing them to have access and explore innovative projects at a lower cost, short time, and fewer risks. With this model corporations work together with startups to find new markets, products or solve business problems with startups' technologies.
- 2) Corporation becomes startup customer: creating an accelerator and work together with startups is a big opportunity to find solutions to many business challenges

and startups wins, through this model of engagement, the opportunity to win a high-profile customer and test their product so it can be scaled.

- 3) Corporation becomes distribution partner: on the third type the corporation and the startup create a channel partnership, so they build up their own distribution networks and the startup can offer their products through high profile companies.
- 4) Corporation invests in startups allows to corporations to access to new markets and capabilities in a faster and lower capital requirement way compared to internal R&D projects. On the other side, startups can access to new source of capital to finance their operations.
- 5) Corporation acquires startup: By this method corporations' access to new markets and solve problems in a very fast way. Corporate accelerators help to scouting and explore possible startups that can be acquired in order so solve specific business challenges. Startups use this method as an exit strategy.

There is no single best model, but some of them adapts better to some objectives and companies' strategies and assets. In order to achieve a win-win situation companies should see startups as customers and build organizations with services that attracts the best ideas and projects. Increasing the chances to develop new technologies, find new potential markets and develop company's strategies (Weiblen, 2015). Being in a corporate accelerator have developed some threats for startups as first, the incentives for both organizations are not the same; second, companies can limit startups development; third, startups can create a dependency relationship with companies and in some cases this protection can avoid market forces that may cause later failure; fourth, being in an accelerator can made avoid the opportunity for startups to create different partnerships and compete that might lead them to a successful path for their projects and technologies (Kohler, 2016). "Corporate accelerators need to achieve mutual benefit. Effective corporate accelerators should seek corporate innovation and offer valuable support for startups" (Weiblen, 2015).

Another way to classify them is by the transferred of knowledge and use between the incubators and the tenants (Becker & Gassmann, 2006):

- 1) The fast-profit incubator which utilizes internally developed technologies and creates new technology ventures with the aim to obtain profits. For example, some

incubators take their non-core technologies from their patent portfolio and start new start-ups and through the incubation process prepare the later spin-off. Usually on this kind of incubators, the knowledge is based on how to start a technological venture, define customer needs and market, and transfer the intellectual properties. Using this model, parent corporation focus on their core competence and the new venture in positioning and explode the new technology.

- 2) The leveraging incubator has an inside-out innovation focus and it tries to support the corporation's growth by matchmaking R&D projects with market and business units that will integrate new technologies to the current and future business. On this type of incubator, the knowledge is focused on building effective partnerships, working with effective communication with other departments, develop new competences, and align them with the company's core ones.
- 3) The in-sourcing incubator uses technological knowledge to screen external projects and high potential start-ups (outside-in innovation) so the company can expand its core competencies and expand their actual business. The incubator helps to bridges the startup to the company for even create a new company or for being part of an existing business unit. Technology scanning knowledge is very important for these incubators as it should be one of the core competences as well as the knowledge transfer process in order to incorporate the new venture to the company.
- 4) The market incubator helps to develop complementary markets and non-core technologies with the aim to increase demand for the main technology and products. "This type of incubator uses complementary market knowledge to segment customer demand effectively, to find satisfying solutions to related customer problems and to be sensitive to markets and customers' needs" (Becker & Gassmann, 2006).

The different types of corporate accelerator models are made also by the different types of engagement and interest that parent organizations have. According to Moschner et al., (2019) and Hochberg (2016) there are four models of corporate accelerators that are explained as it follows:

- 1) **The in-house accelerator** are corporate programs that operate internally. Usually, they are looking for external ideas and startups that are related to current business activities and to specific internal problems. As a consequence, accelerator managers work very close to business units' managers so they can define specific search fields and find potential tenants that can improve eventually corporation performance.

In order to favor networking, startups enter in groups, the facilities are very close geographically to the company and their headquarters, and usually they facilitate open communication and exchange of information to achieve open innovation.

The advantages for corporations to have this kind of accelerators is that they have control over the program. Corporate employees work as accelerator managers and they constantly communicate results and ideas to the management broad and business unit managers so they can identify challenges. Startups can feel attracted to this type of accelerators as they have a sponsor from the beginning of their venture and at the end of the program, they might be able to get a paying customer. But startups and corporations need to manage risk. On one side, startups can be decelerated by the corporations, forced to sign exclusivity agreements, or being trapped in corporate structure. On the other side, corporations invest money on facilities, seed capital, cost of accelerator daily activities, but the projects do not always have success.

- 2) **Hybrid accelerator** programs are an extension of in-house accelerators, but they combine an outside-in approach with an intrapreneurship approach. Usually, they have the same objectives as in-house accelerators, but they also aim to develop and push promising internal ideas. On this type of accelerator, it is not so important the search process but the entrepreneurship culture and the communication between external and internal projects through platforms. The programs are aimed to make startups and internal project exchange ideas, best practices and attend to joint trainings.

Two types of research are made: with exploitation scope, where the communication with headquarters of the company is very important same as the first type of accelerator; and with exploration scope, where the accelerator works

completely independent from the corporation and they look for new ideas different than the ones from the current business model. Typically, hybrid accelerators do not take equity and commit more human resources rather than financial ones. However, external startups may suffer less assistance than the internal ones.

It has been highlighted three main benefits by using this type of corporate accelerator: first, internal projects experience support and are pushed to move forward in shorter times; second, the integration of external and internal human resources allows the communication that may be transferred to the organization; finally, external startups can provide solutions to internal problems with new technologies.

- 3) **Powered by accelerator** is characterized by an independent accelerator that manages on behalf of a single corporation. Companies use this model in order to invest in startups at an early stage, then evaluate them through the accelerator program for decide if make further investment or not.

The company collaborate with an external accelerator that manages the application and acceleration process as the company does not have the experience to manage the screening and accelerator program. Typically, the accelerator is not closed neither to the facilities of the company or the headquarters as the scope is explorative and the incumbents' projects are not always related to the company's core business. Always the funding requires equity stakes from the startup.

It has been considered that this model implies less risk as the company provides moderate human resources that are in charge of exchange information but the accelerate program is operate by an experienced organization. Startups are very attracted to this model since they work with an experienced accelerator and receive great reputation just for being part of the program as well as financial resources.

- 4) **The consortium accelerator** consists of an external accelerator that provide services to different companies at the same time. It is a combination of the in-house and the powered by accelerator model. The accelerator is an independent organization, and it is responsible for screening and scouting processes based on predefined search fields. As corporations are not involved in the internal accelerator organization entry and exit barriers are lower than in-house

accelerators. Corporate employees can visit the accelerator facilities and work with startups without any administrative responsibility.

As there are many firms for startups is easy to find a suitable business case for their innovation. As the accelerator plays a neutral role between firms and startups, the threat of being trapped into corporation structures is mitigated. Companies can discover technologies that could solve their actual problems as startups are informed about the actual needs of the corporations' industries. Besides the exchange of information between startups and companies is good, the integration between them is a complicated process as the company has less control over the programs.

Large and reputable firms can choose any of the presented models and their choice depends on their ability to provide sufficient financial and human resources. Brand reputation is also an aspect to consider as it affects whether to start an in-house accelerator or find an external one. "For medium-sized companies, the consortium model may be the better option as investment costs are lower, contracts are temporally limited, and they can benefit from the reputation of other participating companies or the accelerator itself" (Moschner et al., 2019). The internal corporate accelerator should not focus on the professionalization of early-stage startups but should instead select more mature startups ready to enter the market. Powered by accelerators combine the startup professionalization model with companies' investment objectives. If financial gain is the primary corporate objective of their startup activities, the accelerator activity's major task is the professional development of early-stage startups in order to increase their chances of survival. Companies should not only be aware of startups' need for an agile surrounding for their development, but they should also adapt their internal processes and organizational structures to meet the startups' needs.

1.3.1.1. Open Innovation

Closed innovation is based on the organization's complete control over the whole innovation process. However, this means that the organization is strictly keeping the developed IP out of external reach. But the limitations of this approach are many. Large

investments for supplying the internal Research and Development Departments and high levels of patent cost. Slow innovation process and discard of valuable ideas and technologies. Larger risk for companies during their innovation process due to long term planning of resource allocation.

One example of closed innovation paradigm is XEROX and Palo Alto Research Centre's (PARC) experience. They developed many new technologies that could lead into many products that later changed the world such as the mouse, the graphical user interface etc. But they leaved them and then other companies use them such as Apple and Microsoft. Using this approach, they failed to identify and exploit new markets.

As it was mentioned before, open innovation is a new paradigm that companies appropriate to manage their research and development projects. This concept means that good ideas can come from inside and outside the company. The accessibility of knowledge and its diffusion and the diffusion of human capital have transformed the idea of a central R&D lab and do it by yourself approach. Use as much as possible the surrounding knowledge make cheaper and faster the development of a new technology. With this approach, researchers need to scan and understand a wide range of science and technologies and how to integrate promising them into new systems and product architectures.

According to the open innovation paradigm, companies instead of making money by accumulating technology for their own use, make wealth by leveraging multiple routes to market for new technologies. Instead of restricting the research to inventing, they focus on accessing and integrating external knowledge. IPs are managed to promote their own business model and profit from the use of their rivals' use, and not to exclude everyone else from the use of the technology. R&D strategy should benefit from startups research and efforts and companies might help them of potential areas of interest.

Intel is one example of success of open innovation. They first look outside the company to determine what internal research activities to perform, and how to connect internal and external knowledge to create new architectures and systems. Intel employs corporate VC to build and extend the value chain of suppliers so they can make complementary investments to support the architecture. Additionally, they use the corporate venture investing to explore new potential technologies and markets beyond its core business so

they can see clearly possible scenarios for future Intel's businesses. According with some experts and managers, open innovation is no longer a source of competitive advantage but a competitive necessity (Chesbrough et al., 2006).

1.3.1.2. Intrapreneuship

Intrapreneurship can be defined as entrepreneurship within an existing organization; as a process by which individuals inside organizations pursue opportunities without regard to the resources they currently control (Stevenson & Jarillo, 1990); or as emergent behavioral intentions or behaviors deviating from the customary way of doing business (Antoncic & Hisrich, 2003, 2004; Antoncic, 2007). It can be expressed in four dimensions (Auer & Antoncic, 2011):

New business venturing that refers to the creation of new business related to the existing products or markets and the creation of new units without regard to the level of autonomy. Product/service innovativeness means all the intrapreneurship process of product and service innovation.

Process/technology innovativeness dimension describes innovations in production processes, procedures, and techniques, as well as in technologies.

Self-renewal dimension reflects the renovation of organizations through a restoration of the main ideas on which they are created.

There are many of intrapreneur stories as examples of the good results that this process can bring to an organization. Play Station of Sony started from the initiative of an employee that wanted to make a better console than Nintendo. Facebook like button was born from the "hack-a-thons" event. DreamWorks encourage all staff to be part of the filmmaking process by providing access to courses and sending their ideas. Intel is another example where more than 400 ideas were proposed by employees. Those examples reinforce the idea and the findings that the development of intrapreneurship inside an organization has a positive impact on employee satisfaction and firm growth (Auer & Antoncic, 2011).

1.3.2. Social Incubators

There are many problems that cannot be solved by companies, charities, or governments. Social entrepreneurship appears as a response that tries to solve social dysfunction like climate change, extreme poverty, access to water, deforestation and unemployment. (Pandey et al., 2017). Additionally, the incubators and the accelerator types of support programs are vital and essential for the expansion of social entrepreneurship and the real scaling of social businesses (Casasnovas & Burno, 2013).

Many researchers have tried to define this concept but there is still a non-consensus. As there are many actors and stakeholders the ecosystem of social ventures is complex and has many different perspectives to be boarded (Pandey et al., 2017). One of the first definitions of Social Incubators are those organizations “whose aim is to stimulate and to support the development, growth and continuity of companies employing people with low employment capacities” (Aernoudt, 2004). Additionally, social incubation is “the practice of targeting social challenges with innovative and market-oriented solutions” (Casasnovas & Burno, 2013).

The differences with other conventional commerce startups are that social start-ups focus on vulnerable people and address persistent social problems, while conventional commercial start-ups target a comparatively broader customer base and capitalize on new business opportunities (Pandey et al., 2017). Social incubators offer most of the services that other types of incubators do, such as improve management skills, formulating business plan, define a market and customer segments, and prototyping and testing. Financial resources are achieved in different ways like micro venture capital and micro finance but there is a gap in financing for inclusive innovation and social entrepreneurship (Sonne, 2012).

As social ventures have more complex problems to solve, they might require longer durations of support and extended direct engagement with beneficiaries than the corporate ones (Pandey et al., 2017). They are in a resource-constrained environment, which make survival for startups challenging specially because they want to accomplish a social and business goals (Katre & Salipante, 2012).

According with Casasnovas (2013) there are two models of social incubators: the first one, that generally focus on ventures in early stages and offered services such as advisory in business model and the business plan, networking and access to grants or seed capital; and second one, the social accelerators which choose ventures more mature and with an established business model, usually they include services such as management training, strategic mentoring, networking and access to financial instruments like debt or equity. Besides there are plenty social accelerators models, it is little known about the services that actually social entrepreneurs are looking for and how they evaluate them (Pandey et al., 2017). Additionally, sustainability-oriented incubators are often dominated by tenants that do not have green, sustainable, or environmentally friendly products and services as their core business. Many incubators may feel attracted to sustainability-oriented incubators because of their image, reputation and possible benefits from other stakeholders like authorities or public entities (Klofsten et al., 2020). It appears that there may be mixed incubators in the incubation ecosystem that support both social start-ups and more ‘traditional’ ones (Sansone et al., 2020).

In this research Social Incubator is defined “as an incubator that supports more than 50% of start-ups that aim to introduce a positive social impact” (Sansone et. al., p, 10, 2020). This definition is based on an empirical perspective and it is the one used by the Social Incubator Monitor that was proposed by Sansone et. al. (2020). The study showed that Social Incubators perceive social impact measurement and training/consulting on business ethics and CSR as more important services than other incubator types. For other types of incubators (mixed and business incubators) entrepreneurial and managerial education services are more important than for social incubators. Finally, the study proved that Social Incubators are as efficient as other Incubator types in terms of tenant’s growth (Sansone et. al., 2020).

1.3.3. University incubators and student entrepreneurship

“Universities across the world are increasingly trying to become more entrepreneurial, in order to stay competitive, generate new sources of income through licensing or contract research, and follow policy guidelines from governments” (Jansen et al., 2015).

The movement known as “the third mission” of universities have realized that they should not only focus on teaching and research as their main activities. Besides there is not a consensus about which should be the third mission and the notion is still ambiguous, many authors highlight the importance that universities should help to develop social and economic areas of the society (Laredo, 2007). This third mission should focus on knowledge transfer, commercialization, and innovation as the third pillar of a university (Zomer & Benneworth, 2011). “The concept of the third mission encapsulates many of the rising demands on the university to take a more visible role in stimulating and guiding the utilization of knowledge for social, cultural, and economic development” (Secundo et al., 2017).

Traditionally, academic entrepreneurship has been seen as all efforts carry out by universities to stimulate commercialization on campus and in near regions of the university. However, many new actors, like university incubators, have emerged, as well as new academic practices have changed. The university ecosystem has become more complex and so has the academic entrepreneurship (Siegel & Wright, 2015).

The most powerful resource universities have to stimulate entrepreneurship is their students. Jansen et al., (2015) provides a model tested in three universities (MIT, IIT, and Utrecht University) that gives an outline of offerings that universities can choose and execute to create a complete university's entrepreneurial ecosystem. The model consists in three stages that answer the question: Which entrepreneurship encouragement offerings contribute to the decision of a student to pursue a career as an entrepreneur? The first one is education which aim is to create recognition for entrepreneurship as a career option so students can see entrepreneurship as a career; the second one is to support and encourage students with a business idea in the transformation and the development of a business plan; finally, the third step is incubation which consist, through a university incubator/accelerator transform the business plan into the launch of a real company.

Numerous startups try to enter or find business incubators as the main option to seek for advice and quicker development. But as this organization increases in popularity, the demand for this kind of help also increases. For many entrepreneur's university incubators have substituted these services as they offer programs in where startups have found guidance on their processes (Lasrado et al., 2015). According with Lasrado et. al (2015), university incubated firms had better performance in terms of sales and number of employees whether they were knowledge-based firms or not. Also, they showed that university incubator programs had better effect on their firms as they performed better in terms of sales and number of jobs compared to their counter parts. These results support the idea that university incubators provide more comprehensive services, connectivity and legitimacy with key industry and community stakeholders.

1.3.3.1. Student entrepreneurship

The study of academic entrepreneurship has focused and been attached to scientific research, patenting and technological transfer activities (Abreu & Grinevich, 2013). Besides the importance that student entrepreneurship has in the academic entrepreneurship environment, it has received less attention within research field (Grimaldi et al., 2011; Marchand & Hermens, 2015). Apple, Microsoft, Dell, Facebook and Snapchat are examples of great businesses that were developed within an academic environment. As it was mentioned before, the third mission of universities is related to innovation, social change and industrial competitiveness (Siegel & Wright, 2015). The contribution of universities in innovations and technological transfer have the same or even less influence to society in terms of the third mission, than the whole new ventures done by students that are not related to direct outcomes of scientific research and formal technology transfer activities (Politis et al., 2010).

Student entrepreneurship literature have highlighted some aspects that are crucial for the student entrepreneurial behavior. One of the first aspects is the age, which emphasized the fact that younger students can absorb more easily the uncertainty that arises with new ventures and that university environment can provide them with the resources needed to start. Family income and family entrepreneurial background are considered key elements

and significant predictor for entrepreneurial behavior. The presence of these variables can be associated with a transaction costs reduction, entrepreneurial culture and relations. Finally, some students start new ventures through spinoffs related to academic research, like Google (Alves et al., 2018). However, Uhlaner & Thurik (2005) found that higher levels of education are associated with lower rates of self-employment.

1.3.3.2. Academic spinoff

Academic spinoff is one of the key elements for the university “third mission” that tries to foment academic entrepreneurship. Academic spinoff is defined as “a start-up created when the licensee of a university-assigned invention creates a new company to exploit it”. (Di Gregorio & Shane 2003, p. 2010). The literature has highlighted the importance of five aspects that can contribute to the creation of academic spinoffs:

- Personal factors: the first aspect makes references to the motivation, the social capital and the previous experience of the faculty members and students as key characteristics that contribute to create academic spinoff (Rasmussen et al. 2011).
- Financial factors: financial resources for researches increase the likelihood of developing a technology that might become a spinoff. However, private resources have an opposite effect as the knowledge and technologies are transferred to the private sector instead of creating academic spinoffs (Sansone, 2019).
- Organizational factors: technology transfer office is one of the most important organizational factors that contributes to increase the probability of creating a new spinoff. the more the capabilities included in TTOs, the higher the support they can offer to researchers. But also, the communication and the presence of external organizations such as incubators and scientific parks can have a positive impact for academic spinoff (Sansone, 2019).
- Cultural factors: the development of an entrepreneurial culture is critical. Through communication and education programs regarding entrepreneurship, they can dilute cultural barriers which are the principal inhibitors to the promotion of academic and student’s entrepreneurship (Hayter 2011) and technology transfer (Siegel et al. 2003).

- **Policy and ecosystem factors:** this aspect embrace all the policies that can develop the entrepreneurial culture and all the incentives that universities can create in order to increase the number of academic spinoffs, such as entrepreneurial courses, TTOs faculties, incubators, and so on.

Despite there is an identification of the main factors that can affect the creation of academic spinoffs there is no sufficient literature and studies that can explain the heterogeneity and complexity of this phenomenon (Sansone, 2019).

1.3.4. Business, Mixed and Social Incubators

According with the SIM the classification of incubators can be made to understand if and how much incubators are supporting organizations delivering social or environmental impact (Social Innovation Monitor, 2019). This classification has the advantage that allows to analyze the phenomenon of social incubators and is done as it follows:

- **Business incubators:** incubators that do not support startups that have the aim of introducing a positive social impact.
- **Mixed incubators:** incubators that support from 1 to 50% of startups that have the aim of introducing a positive social impact.
- **Social incubators:** incubators that support more than 50% of startups that have the aim of introducing a positive social impact.

This research is going to follow this classification.

1.4. Services offered by the incubators

There is a great variety of services that incubators offered to their tenants. The degree of specialization, the sector, the social and economic context, the type of incubator and the stakeholders are some variables that make degree of importance and development of these services offered by an incubator. Those services help tenants to reduce the risk of failure and to speed up the process of generating new and sustainable businesses models.

Following it is shown a description of the most important services offered by incubators:

1. **Managerial Support:** Incubators provide support to specific management plans including marketing plan, identify market sector and customers, accounting, strategies and sales management (CSES, 2002; infoDev, 2016). In order to guarantee a successful business model, Incubators also work to stablish an effective entrepreneurial team combining knowledge and skills in an appropriate way (Von Zedtwitz & Grimaldi, 2006).
2. **Physical spaces and shared services:** Incubators provide to their tenants many types of facilities in order to help them to overcome initial critical phases. Offices, meetings and conference rooms, laboratories as well as internet, office equipment like printers and copiers are provided. According to Hackett & Dilts (2004), the importance to offer this service is to reduce new venture fixed cost and also facilitate the access to technological resources and equipment.
3. **Entrepreneurial and managerial education:** As venture teams should develop entrepreneurial abilities and knowledge in order to maintain the business along time it is necessary to train them. But it is also important to develop soft skills as these ones facilitate many managerial aspects of an enterprise inside the organization and also with other stakeholders (InfoDev, 2016).
4. **Access to finance:** The access to finance is very difficult for startups as generally they do not have any collateral good making very hard to acquire a bank loan Miller & Stacey (2014). discuss that this is one of the greatest challenges for entrepreneurial projects and incubators are one of the options to cover this necessity. Incubators usually bring closer potential investors like business angels

or venture capital funds but also some of them are able to actually invest in the startup in exchange of a stake of equity.

5. **Administrative and legal services:** This service help to provide legal assistance and consulting in order that entrepreneurs can understand the process related with regulations and laws at national and international levels especially those that involve the creation of the new company.
6. **Intellectual property (IP) managing support:** the protection of intellectual property especially in the high-innovation and technology sectors is an essential aspect to consider when there is a creation of new product or process (Lalkaka, 2000).
7. **Networking:** The network is a crucial element in the growth of new businesses because it allows the access to new information and valuable resources by lowering search costs (Bank et al., 2017). Thanks to that incubators help startups to build strong partnerships with investors, universities, private companies, or other Incubators.
8. **Technology development and scouting support:** technical support is useful for scientific and technological startups, especially for technology transfers and commercialization of innovative ideas through products or services (Smilor, 1987).
9. **Social impact measurement services:** Incubators determine the scope of the benefits of the companies created for society and environment. Some investors are interested in startups with a significant social or environmental impact, so it has been necessary to measure social outcomes and impacts.

One of the principal ways to measures social impact is the Social Return on Investment. The SROI can be applied in many types of social organizations as it contemplates quantitative and qualitative aspects. “SROI is a framework for measuring and accounting for this much broader concept of value; it seeks to reduce inequality and environmental degradation and improve wellbeing by incorporating social, environmental and economic costs and benefits”. More than money, SROI measures real value (Nicholls, 2016). The SROI is a comparison between the generated value from an intervention or action and the cost incurred

doing that action. The higher the SROI, the more value is created. The principal limitations of the indicators are that it cannot compare all types of projects and the results are subjective.

10. Formation/consulting on Business Ethics and CSR: With the development of concepts like CSR¹, business ethic and social entrepreneurship (Dees, 1998), many changes have been done in the innovation process to focus and give new solutions to social challenges. Many incubators have developed services to offer specific support in these topics (Giordano et al., 2015) as they are crucial to compete effectively in the market (Driver, 2012).

¹ Corporate Social Responsibility refers to the fact that business not only produce economic wealth, but the operation of their activities has impacts in other areas of life. This impact can be categorized into five dimensions: environmental, social, economic, stakeholder and voluntariness. There are many researches that have studied the impact of CSR on shareholder value and financial performance. This impact depends on factors like the type of CSR performance analyzed, on industry characteristics, on firm specific characteristics, and also on the moderating effect of disclosure transparency.

1.5. Other support organizations

The organizations that provide support through physical or intangible services to entrepreneur projects and new ventures have acquired more relevance every day (Vigliani et al., 2020). “While young ventures often rely on a mixture of debt and equity financing, the literature on high-growth-potential start-ups has largely focused on outside equity finance, such as venture capital (VC), corporate venture capital (CVC), angel investment, crowdfunding, and/or accelerators” (Drover et al., p. 2, 2017).

The purpose of this section is to generally describe the main characteristics of some of the most important forms of equity finance for startups and entrepreneur projects.

1.5.1. Business Angels

“Business Angels are high wealthy individuals, usually former entrepreneurs or professionals, who invest their own money in promising start-ups in which they have no direct connection, in exchange for ownership equity, acting alone or through semiformal networks” (Tenca et al., p. 1385, 2018).

Business Angels not only contribute with capital but with experience that is why their capital is also called ‘smart money’. They are generally part of the top management of the startup adding value and guidance to investee firms (Tenca et al., 2018).

They play a key role in the entrepreneur and innovation ecosystem as they invest in the early stages of the new ventures’ lifecycles, a period where other types of investors normally do not have any interest. As these early stages are riskier, their investment is crucial for the entrepreneurs because they face big difficulties in obtaining risk financing under acceptable conditions (Aernoudt, 2005).

The approach of investing is normally less formal than the ones made by other forms of venture capital, specifically regarding the level of due diligence conducted, the formality of contracts and control involved (Drover et al., 2017). Using this informality, they limit their risk, investing only part of their capital that covers the seed phase of the venture but maybe not enough for a second round of financing, that other forms of formal venture capitalists are obligated to face (Aernoudt, 2005).

As the startup starts to grow Business Angel's role loses more importance due to change of necessities of the venture. Once they have reached a validated business model, higher amounts of capital are needed increasing the necessity of searching for a more formal financial institution (Hellmann and Thiele, 2015).

As the Business Angels' market has grown, they have become more professional and joined or created semiformal or organized networks (Tenca et al., 2018). with the aim of investing in projects they never could have participated in as individuals and to offer more access to capital to other startup ventures (May, 2002). Progressively, their investment process seems like that of Venture Capital organizations (Tenca et al., 2018). Participating in groups also carries a better protection for business angels leading to a larger and more competitive angel market, more entrepreneurial entry, higher angel valuations, and a higher probability of success (Hellmann & Thiele, 2015).

1.5.2. Venture Capitalist

Venture capitalists are professional investors that fund portfolios of potentially high-growth ventures (Drover et al., 2017) whose goal is to maximize present values of their current and future fund revenues (Metrick & Yasuda, 2011).

As entrepreneurs require capital for developing their ideas but with lack of tangible assets and negative earnings, searching for bank loans or debt financing is almost useless. Venture capitalist finance these high-risk, potentially high-return ventures, purchasing equity shares and also providing access to consultants, investment bankers, and lawyers. The funds are made from resources of a limited set of partners and seek to provide a return to them through selective investments into a portfolio of new and innovative firms (Gompers & Lerner, 2000).

Usually, these funds are organized as limited partnerships, with the venture capitalists or the buyout firm partners acting as the general partners (GPs) of the fund, responsible for the investment activities and the investors – often pension funds, endowments and other institutional investors – acting as the limited partners (LPs) (Metrick & Yasuda, 2011).

Venture capitalist always face asymmetry of information as it is highly provided by the entrepreneur and it is not public and accessible such as other types of investments like

stocks or bonds. They received many requests making the screening process and the decision criteria one of the most important aspects for the funds. According with Kirsch et al. (2009), “Venture screening is a particularly interesting instance of fast decision making under uncertainty. Venture capitalists review hundreds or even thousands of proposals for every one that receives funding”. The study concludes that is not the planning documents, like the business plans, that define whether invest or not, but the critical information is learned by the venture capitalist through alternative channels.

The asymmetric problems of information also affect the contracts between the portfolio companies and the fund. As VCs are thought as solutions to the underinvestment problem result from information asymmetry between entrepreneurs and uninformed investors, the contracts used in VC transactions normally have elements that address possible agency problems (Metrick & Yasuda, 2011).

According with Franke (2008), Venture capitalist evaluate teams searching principally for their industry experience, educational background, and leadership experience. However, there are some differences between novice and more experienced Venture Capitalist in how they rank these variables. The research this might lead to a problem by the fact that novice VCs are responsible for the initial screening of business plans, acting as gatekeepers for the more experienced VCs. As the evaluation and screening process is different, novice VCs can reject many good candidates that VCs would have evaluated more positively (Franke et al., 2008).

Usually, the invests are provided in a series of financing rounds but not at once, they are done according with some milestones. Venture capitalists typically exit their successful investments by taking them public. It is strange that a VCs sell their shares by the time the company goes public (IPO), they generally do it after two years (Gompers & Lerner, 2000). Normally the time since the first investment and the exit after the IPO does not exceed 10 years (Berglof, 1994)

For a startup being finance by a Venture Capital fund contributes to the professionalization of it. The creating a formulation of human resource policies, the adoption of stock option plans, and the hiring of a vice president of sales and marketing (Hellmann & Puri, 2002). Additionally, firms working with venture capitalist tend to replace the founder with an outsider for the CEO position (Metrick & Yasuda, 2011). All these advantages contribute

to the growth of the new company (Bertoni et al., 2011). The founders supported by VCs gain greater credibility and visibility by increasing their attraction to partners, clients, and human capital (Stuart et al., 1999).

1.5.3. Venture Builder

“Venture Builder is an organization that creates ventures by providing not only traditional incubation services and equity but acts as a founder or co-founder of the startups involved. The Venture Builder holds a considerable share of equity capital of these new ventures, thereby exerting a significant influence on these new ventures beyond their seed and startup phase” (Viglialoro et al., 2020).

According to Rathgeber et al., (2017), Venture Builder does not have a common definition which makes it difficult to estimate a number or an estimation of the existing number of them. Venture Builders are known as organizations that instead of producing physical products creates new ventures based on ideas created inside the organization that typically keep a significant share of equity capital from the ventures (Rathgeber et al., 2017). On the other side, Scheuplein & Kahl (2017) proposed that the ideas not only came from internal sources, when they act as founder, but also from external of the organization in which case they act as co-founders.

They accept a great risk of failure by taking full control of the new venture creation process Scheuplein & Kahl (2017). Venture Builders provided human and financial capital that is exchanged for a huge amount of equity from the ventures (GAN - Global Accelerator Network, 2019). As they provide managerial and financial services it is important to distinguish the unique characteristics that differentiate them from Venture capital funds and incubators. They act as founder or co-founders of the start-up and the organization is made to constantly create new ventures. There are four types of venture builders: corporate venture builder, that develop new ventures mainly associated to the business of a parenting corporation; social venture builder that creates social ventures which purpose is to solve social or environmental problems through innovative and market-oriented solutions; university venture builder which aim is to promote the

development of academic entrepreneurship; and independent venture builders, that work with internal and external ideas to create new ventures.

Venture Builders are composed by teams with know-how and experiences on venture creation. Bringing competences to various ventures at the same time, they create clusters of entrepreneurs' projects in the same place that make easier the creation of new successful projects. Venture Builders do not behave like mentors that advise about managerial or legal issues; they execute as founders of the start-up. (Viglialoro et al., 2020).

According with Viglialoro et. al (2020) "The common features of Venture Builders are the following five. They have a core team and entrepreneurs with a high level of know-how and experiences on venture creations. They mostly generate ideas internally or, in other cases, act as a co-founder. They create new ventures in parallel in order to reduce the risk of failures. They have a shared infrastructure with tools and network to create new ventures. Lastly, they have in-house funding in order to financially support their ventures" (Viglialoro et. al, 2020, p.9).

1.5.4. FabLabs and co-working spaces

FabLabs and co-working spaces are locations where entrepreneurs can develop their new ventures with all facilities needed.

According with Marvilhas & Martins (2018), FabLabs are collaborative spaces where there is an exchange of knowledge that leveraged innovation and product development based on new ideas that came from the participants. It is a solution for entrepreneurs that are looking for low-cost rent, entrepreneurial environment and facilities that allows them to operate at the beginning of the venture.

These places provide their users with a huge variety of open-source tools and equipment as a big innovation lab for a very low cost. In this way, they promote the development of locally-based projects and entrepreneurship ideas (Chesbrough, 2003)

FabLabs not only provide technology and facilities for their users. They provide many services that allow users access to knowledge and techniques like manufacturing techniques, production and prototyping technologies, workshops and training courses, business models and financing (Mitev et al., 2018).

On the other side, co-working spaces are locations where creative and entrepreneur people find a collaborative environment where they are able to develop their ideas (Moriset, 2014). Besides the places and facilities is important and the cost from being part is a key aspect for the users, the community that is formed in those places generates a very unique entity that encourage the work being done and emotional support.

Co-working spaces are increasing their influence on the entrepreneurship environment (Mitev et al., 2018). Services offered like mentoring and coaching are starting to be an essential part of them. Networking is another essential aspect of the organization as in these places the community of professionals plays a crucial role in order to construct that community and the environment that takes place on these spaces.

1.5.5. Crowdfunding

Equity crowdfunding is an important and fast-growing economic phenomenon (Vulkan et al., 2016) that allows a great variety of new ventures like profit, cultural, or social projects, to ask for funding from many individuals, frequently in exchange of future products or equity. As there is a great variety of projects the amounts of money that entrepreneurs are looking for also vary from small amounts to huge ones in seed capital as a substitute to venture capital investment (Mollick, 2014). According with Schwienbacher & Larralde (2010), Crowdfunding seems to be a possible source for seed capital permitting new ventures found funding to start in business.

It has been identified four main models of crowdfunding that can overlap each other as new ventures can achieve numerous distinct goals simultaneously. The first one is the patronage model that support art or humanitarian projects in which funders do not expect any return. The second model is the lending one, where funds are offered as a loan with an expected rate of return. Microfinanced loans is a mix between these two models as there is a loan but the funder expects more a social good more than a capital return. The third model is called reward-based crowdfunding and one of the most spread models. In this model funders are expected to receive a reward for supporting a venture like a prototype and are treated as early customers permitting them access to the products at an earlier date, better price, or with some other special benefit. Finally, the equity

crowdfunding model is the one that treats funders as investors (Mollick, 2014). A huge number of online investors contribute smaller amounts for fractions of company ownership (Vulkan et al., 2016). Equity crowdfunding moves control to the entrepreneur by substituting a minority of bigger outside investors with a large number of smaller ones (Drover et al., 2017).

2. Incubation landscape in Spain

The phenomenon of incubators has been growing exponentially across the world to potentiate the development of startups and entrepreneurship. In Spain, the same behavior has occurred since it was created in 2007 Fivelab, the very first incubator (Velasco, 2017). According with the Social Impact Monitor in 2019 there was more than two hundred of incubators in this country, especially in the regions of Madrid, Andalucía, Cataluña, and País Vasco (Social Innovation Monitor, 2019). In fact, more than half of the incubators have been established since 2012 with a peak in 2014 and 2015. This shows that the incubation phenomenon in Spain is growing and it is recent.

The same trend is happening with entrepreneurship in Spain, near 99% of the total amount of enterprises are little and microenterprises that constitute an essential aspect in terms of jobs, with around 70% of the total employability. Since 2014 the number of new enterprises also started to grow, a phenomenon that is highly related to the increase in the number of incubators that started in 2012 (Funcas, 2019).

To evaluate the easiness of starting up a new business, the world bank does every year the doing business report. Governments around the world adopt regulations with the aim to improve the conditions of the people in their country. Those limitations that affect directly in areas like wages and prices, property rights, and licensing impact negatively economic freedom, gross domestic product (GDP) growth and economic development. In consequence, these regulations sometimes do not achieve their purpose but obstruct entrepreneurs' and citizens ability to freely operate a private business and generate wealth. It has been found that low-income economies that achieve higher levels of economic efficiency increase entrepreneurship activity, generate employment, more government tax revenues, improve personal incomes and reduce the income gap with the more developed ones.

The world bank evaluates eleven areas through a series of index with the aim of calculate the performance of 190 economies. These areas include (World Bank Group, 2020).

- Starting a business: Procedures, time, cost and paid-in minimum capital to start a limited liability company.

- Dealing with construction permits: Procedures, time and cost to complete all formalities to build a warehouse and the quality control and safety mechanisms in the construction permitting system.
- Getting electricity: Procedures, time and cost to get connected to the electrical grid, and the reliability of the electricity supply and the transparency of tariffs.
- Registering property: Procedures, time and cost to transfer a property and the quality of the land administration system
- Getting credit: Movable collateral laws and credit information systems
- Protecting minority investors: Minority shareholders' rights in related-party transactions and in corporate governance.
- Paying taxes: Payments, time, total tax and contribution rate for a firm to comply with all tax regulations as well as post filing processes.
- Trading across borders: Time and cost to export the product of comparative advantage and import auto parts.
- Enforcing contracts: Time and cost to resolve a commercial dispute and the quality of judicial processes.
- Resolving insolvency: Time, cost, outcome and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency.
- Employing workers: Flexibility in employment regulation and redundancy cost.

In the doing business report, Spain ranks above many countries in Europe like France, Portugal, Italy, Poland, Belgium and Netherlands. One of the issues Spain, and in general Europe, need to improve is developing more flexible conditions of employment as strict employment protection legislation shapes firms' incentives to enter and exit the economy, which has strong repercussions for employment and economic growth. Since 2008, Spain is working on adopt measures to improve its performance like protecting minority investors, made enforcing contracts easier, improve access to electricity, paying taxes less costly by reducing the property tax rate, vehicle tax rate, tax on property transfer, and abolishing the environmental fee.

The Digital Startup Ecosystem Overview 2019 highlight the importance of Madrid and Barcelona as prosperous places for startups, consolidating as top tech Hubs in Europe. In

2018, marketplace, e-commerce, and mobile were the top startup sectors in Spain and the leading industries include home, transportation, and enterprise software. What is more, since 2013 investments in tech companies surpassed €1 billion in 2018 with an increase of 67.3% from 2017. Overall, €1.3 billion was raised by Spanish startups in 2018 with 34 exits. That marks an 46.08% increase from €850 million in 2017 (Mobile World Capital Barcelona, 2019).

Despite the phenomenon of incubators is relatively new and improving, it faces great challenges. According to the Global Entrepreneurship Monitor, Spain in 2019 has a lower level of entrepreneurship spirit than the world average and, in the same year, the entrepreneurship index performance decline compared to 2018. The number of new enterprises on the manufacturing, construction, and service sectors have grown as well as the percentage of new companies that sells more than 25% of their revenues to international markets. However, these indicators remain lower than other European and high revenue countries. Additionally, most of the new business in Spain do not developed innovation neither in products (66%) nor in production processes (70%) (Global Entrepreneurship Monitor, 2019). One of the biggest challenges is to change the perception of new business opportunities that are below the European average and the fear of failure that is very high due to the perception of lack of financing and government policies pro entrepreneurship (Funcas, 2019).

According to Funcas in Spain, the phenomenon of incubation started mainly with a private background but day by day the public sector and consortiums are increasing its participation in incubator initiatives. However, the SIM report for 2019 showed that the incubators are distributed more or less equally between public and private incubators. More than half of the incubators in the research (58,1%) incubates organizations with significant social impact (mixed and social) and near the 40% are business incubators. The estimated number of incubator employees is around 1400 and the teams and organizations incubated in the sample are more than 1300, most of them for-profit companies (Social Innovation Monitor, 2019).

For most of the incubators the main objective is to create sustainable and viable enterprises that generates economic development and innovation. Only a small group reported to expect to generate profits as their main objective. In fact, the majority of the incubators

actually do not invest in exchange equity and prioritize other goals rather than generate revenues (Funcas, 2019).

The most valuable services for tenants are managerial support, access to finance, physical spaces, shared services, and entrepreneurial and managerial education. Other relevant services are networking, technology development and scouting support, administrative and legal services, and intellectual property (IP) management support. The ones with less important are Social impact measurement services and formation/consulting on Business Ethics and CSR (Social Innovation Monitor, 2019).

Besides many challenges, year by year, Spain has improved its startup ecosystem. With more than 4000 startups and a lot of talent, investment, and capital. Spain is working in order to consolidate as one of the promise countries in Europe in economic terms.

The 2020 Global Startup Genome Ecosystem report have highlight and expose the consequences of the actual health crisis made by COVID-19. Entrepreneurship around the world has been affected by a crunch for capital across the world and by a demand drop for most companies. Those main problems have caused a reduction on 72% of startups revenues and the real danger of collapse caused by insolvency and lack of capital. Startups have suffered also a reduction on the jobs offered, salaries and the departure of human capital that is absorb by large corporations. According with the report, tech economy is going to be crucial for the recovery of the global economy as it is one of the key sectors for employment. Additionally, they have found that economies are high dependent of their startups as a startup ecosystem 3x larger creates 5x more economic value. The global startup economy persists huge, producing nearly \$3 trillion in value, a number similar with the GDP of a G7 economy (Startup Genome, 2020).

There are 30 cities that are going to become the next entrepreneurship centers with a similar potential of Silicon Valley. But there are also 100 cities that combined generate a 115 billion-dollar startups club. Spain has three cities that belong to these 100 ecosystems including Madrid, Barcelona and Valencia. The big challenge for these countries and cities is to increase the startup ecosystems, learning from leader ones to leverage their strengths and focus their efforts and resources (Startup Genome, 2020).

Many challenges have Spain to continue developing its startup ecosystem. Madrid and Barcelona are playing a key role in the economy and other regions are starting to increase

their participation. As was mentioned before, incubators and entrepreneurs play a key role in the recovery of an economy hit beaten by COVID 19 but that in the past years have shown the will and the effort to become better.

3. Methodology

As it was said before, the main purpose of this research is to understand the evolution and the features of incubators/accelerators in Spain. This chapter aims to describe all the steps necessary to analyze the spread and development of Incubators in Spain. The methodology is divided into 4 phases that following is going to be explained:

- **List of Incubators:** After doing a research about all the active and founded incubators until December 2018, it was created a list with all names of incubators/accelerators;
- **Database population:** the second step was to complete a database with incubator's information regarding address, contacts (email and number), website, type of incubator (university, company, company with partnership), date of establishment, local and foreign locations, financial information (such as number of employees, revenues, EBIT and EBITDA updated to 2019) and company data (VAT number and company name);
- **Questionnaire creation:** starting from the Italian version of the questionnaire presented by the SIM team during the previous years of research, an updated questionnaire was made for the Spanish context with the aim of collecting further material directly from the owners of the Spanish Incubators. The focus of the questionnaire was to discover information concerning mainly the type of incubated tenants, sources of income and financial data, field of specialization and social impact provided to the company;
- **Sending questionnaire:** after the creation of the questionnaire, it was uploaded to Survey Monkey and then distributed among the Spanish Incubators listed in the database. To achieve higher participation rates, several collaborations have been established with the Spanish Startup Association, Experientia, Instilla, and Social Innovation Teams in order to associate research with a reliable local source of information;
- **Data analysis:** the final phase was crucial to synthesize all the collected data, offering final comments and interesting open points for further future analysis.

3.1. List of incubators in Spain

The first phase of the methodology was aimed at finding all the Incubators actively operating in the Spanish territory until December 2018. This initial part was crucial due to the importance to have a strong starting point to proceed with the subsequent analysis. As a consequence, the first step was to select accurate and reliable sources of information about incubators, such as websites, newspapers and local reports. Then there was a process of checking all the incubators on the list in order to exclude all out-of-scope incubators, because they are not aligned with the definition given in the SIM report. Many organizations that were more aligned to other kind of organizations like coworking spaces, technology parks and makerspaces but use the name of incubators/accelerators were excluded from the research.

The selection of incubators is a process that have to done very carefully as the results can be affected by wrong data and unreliable information. Having an extended period of time for the research phase allowed multiple checks on the list, with the guarantee of a more reliable final output. Checking the list over time was important to be sure of include only Incubators consistent with the definition and also active in the country. When doubts were raised, the founders or members of the Incubators were contacted directly via email, social networks and phone calls as needed.

At the end of this initial phase, the final result was a list of 215 incubators widely distributed in Spain.

3.2. Population of the database of Spain

This second phase of the methodology aimed to collect a variety of data regarding each of the previously listed Incubators, creating a complete database of information. This phase can be divided into two micro-phases: the first one was finding information such as institutional nature, typology, contacts, and geographical location based on Incubator's websites; while the second part was aimed to extend the search to all financial and legal data, using the support of the Orbis database.

The database columns were structured as follows:

1. **Incubator name:** in the first column of the database, each Incubator has been identified by a name, carefully selected according to predefined criteria. In fact, all Incubators classified as "University Incubators" needed the name structured as "University of [city] - [Name of the incubator]", while all Incubators classified as "Business Incubators" wanted the name "Company [Name of the company] - [Incubator name]". This process was really useful for alphabetizing the Incubators and finding duplicates.
2. **Institutional nature:** this second column aims to differentiate between public, public / private and private Incubators. In the first category only Incubators with private stakeholders were included, in the second only Incubators owned by public bodies.
3. **Email:** all the emails found on the Incubator websites have been collected in this column and subsequently used for the dissemination of the questionnaire. On rare occasions, online forms to fill out were provided instead of email.
4. **Telephone:** In some cases, the telephone number of incubator members were added in order to have other communication channels.
5. **Website:** in this column all the websites concerning the Incubators and their programs have been collected. This process was really important for more future checks on the information obtained. It is important to highlight that a significant number of incubator websites were closed in a relatively short period of time (i.e. 6 months), which means that the creation of the incubation program was only focused on a specific and limited occasion in the time.
6. **City, NUTS 3, NUTS2 and NUTS1:** to get a better picture of the Incubators spread throughout the Spanish territory, information regarding the location of the headquarters has been saved, specifying the city, the region and the area. The classification of the region and the area was supported respectively by the NUTS3, NUTS2 and NUTS1 criteria, for the subdivision of the Spanish territory according to a statistical approach.

7. **VAT Number, Identification Number and Legal Reason:** this legal information was found later, using the Incubators database. It was to associate each incubator with a registered legal business.
8. **Date of foundation:** the year of founding of the Incubators was considered very important information for the analysis. These data, in fact, summarize the diffusion by average age of the Incubators phenomenon within the country. For this reason, the founding date was checked three times: the first time it was searched on the websites, the second time on the Orbis platform and finally it was asked when sending the questionnaire.
9. **Number of employees, Revenues, EBIT and EBITDA:** all these columns related to financial information were partly found in the Incubators database and partly obtained from the questionnaire responses. The financial data were significant for understanding the profitability of the Incubators' activities in the country.
10. **Type of incubators:** the incubators have been classified into University Incubator, Corporate Incubator, or Corporate with Partnership. In order to immediately view this classification, the above types have been identified by 3 columns, using the Boolean rule for identification: "1" if the incubator was included in the type, "0" if it not. The Boolean rule was also significant for checking the correct database population. For example, an important check was to verify that all business incubators with partnerships were also included in the category "Business incubators".
11. **Location:** the final columns concerned the geographical spread of the Incubators' activities. If the Incubators had other locations in Spain, the relevant column was set to 1 and the cities and regions were specified in their respective columns. Similarly, in case the incubators were based in other countries, the column was set to 1 and the names of other countries were listed in the respective column.

3.3. Creation of the questionnaire

The questionnaire was initially inspired by the survey conducted by the SIM team in 2018, and then some suggestions were adapted according with the results of the past years. In fact, when the questionnaire was disseminated among Italian incubators, it was common to get both positive and negative comments from respondents: those feedbacks were really useful to formulate more complete questions and increasing the probability of obtaining more reliable answers. After the improvement of the questions to be submitted, the Spanish version of the questionnaire was created first in Microsoft Word and then in Survey Monkey, the website used for questionnaire diffusion and collecting the answers. The questionnaire aimed to enrich the Incubators database with additional private information, focusing on three main aspects: the typology of the incubated tenants, the financial activities of the Incubators and the rate of involvement in the Incubators that provide social solutions.

In fact, the questionnaire was structured in several sections, all comprising mixed types of queries (i.e. open questions, multiple choices and True / False answers).

The sections have been divided into arguments, as listed below:

1. **General information:** set of questions regarding the name, date of foundation and number of employees of the Incubators.
2. **Businesses:** in this section there were questions regarding the incubator selection process, starting with their field of specialization, the type of tenants selected, the incubation period and the financial request for the tenant incubation.
3. **Social impact business:** this section was customized based on the answer collected to the question "in 2018, did you support business teams and organizations focused on market-based solutions with a strong social impact?". If the answer was "Yes", the next section went into more depth on the Social Impact topic, asking mainly the criteria used in the selection and the main field of specialization of the Social Business Companies included in the portfolio. Conversely, if the answer to the same question was "No", the next section was created to better understand the reasons behind the choice not to invest in Social Impact Business.

4. **Budget:** this section wanted to obtain the main results recorded by the incubator, including costs and revenues.
5. **Activities:** This section covered the activities provided within the Incubators, classifying the final receiver of these services.
6. **List of tenants:** Finally, it was asked to provide a list of all the tenants incubated in the year 2018 in order to have a complete overview of the numbers and the field of specialization of each.

The main difficulties encountered during this third phase of the methodology were the adaptation of the questionnaire to the feedback collected and the subsequent translation into Spanish. In fact, the most important point for a questionnaire to be successful is its clarity and consistency: to be sure of the grammatical structure and the correct use of specific terminologies, the questionnaire has been checked and corrected when necessary by a native speaker.

3.4. Presentation of the questionnaire

The data collection phase lasted from October 2019 to February 2020, the whole process can be divided into two phases: the first, characterized by multiple rounds of e-mails to spread awareness, and the second in which the Incubators were contacted by phone calls, with the aim of speeding up the completion of the investigation.

The e-mail phase was supported by the official e-mail address es.Incubatormonitor@polito.it and consisted of three e-mail cycles.

As for the first round of emails, the goal was to spread the knowledge of the SIM team, the research and the survey.

Four days before the collection deadline, a second round of e-mails was released: this time, the aim was to convince the Incubators to participate in the research.

The second part of the research was based on telephone calls, where the aim was to encourage the majority of the incubators to participate in the research. The main advantage of the phone calls, in fact, was the possibility of being in contact with all those “not reached” incubators, who did not participate in the survey because they were unaware of the research. In some cases, the e-mail was automatically placed in the "spam" folder or was received by secretarial operators instead of by managers, unable to answer the questions asked.

The approach used for telephone calls was collecting the first incomplete answers: incubators with missing sections were contacted and persuaded to complete the questionnaire. Subsequently, all the other Incubators were called according to a standard procedure: initial brief presentation of the research and the team followed by a concise explanation of the sections of the questionnaire. In case of no phone response, the incubator was called at least three times before trying with social media.

In parallel to the phone calls, Giuliano Sansone and Prof. Paolo Landoni personally contacted a professor from the Incubator of each university, with the common goal of increasing the participation rate in the survey.

At the end of the collection phase, a total of 43 Incubators fully participated in the survey. Considering the total 215, the first Spanish search was definitively closed with 20% of the response rate.

Throughout the collection phase, the mail was checked once a day to answer any doubts and to update the e-mail addresses in the database.

The Survey Monkey website was also checked daily to track research progress. The response of each completed questionnaire was checked for any anomalies in the information provided: in case of univocal answers, the incubator blank was signed as "completed questionnaire" in the database. Instead, each Incubator was contacted who sent an incomplete survey, requesting completion of the missing answers.

The sending of the questionnaire is considered an important part of the research process, in fact it allowed to collect various positive and negative feedbacks: on the one hand, some Incubators were happy to participate in the research, showing interest in the analyzed topic and in the point of view selected. On the other hand, all the negative feedbacks collected allowed a future improvement of the research, starting with a refinement of the submission phase.

4. Analysis

The survey closed with a total of 43 out of a total of 215 incubators active in Spain in 2018. All the answers collected were carefully analyzed, excluding incomplete and wrong answers. After cleaning the sample, 43 complete responses were considered for research purposes equivalent to the 20% of the population.

The analysis phase was structured in 2 main sections:

1. Overview of incubators in Europe: this part aims to describe the development of incubators in the European context, with particular attention to their classification and distribution by country.
2. Analysis of incubators in Spain: the central part of the analysis aims to identify the main points in common and the differences between the sample and the entire population of incubators in Spain.

4.1. State of incubators in Europe

In 2018 the country with the greatest number of incubators was France (284), then the UK (274), Germany (247), Spain (215) and Italy (197). The results present the fact that Germany, the UK and France are recognized by the quality and the quality of their incubation programs as they were the first ones to develop these types of organizations and services.

	France		UK		Germany		Spain		Italy	
Incubators	284		274		247		215		197	
	Tot	%	Tot	%	Tot	%	Tot	%	Tot	%
Corporate Incubators	39	14,10%	40	14,50%	58	23,60%	27	12,70%	18	9,30%
University Incubators	62	22,40%	75	27,40%	38	15,40%	24	11,30%	27	13,70%

Table 1. Spread of incubators in Europe

The data obtained also helped us to differentiate how is the distribution of incubators between corporate and university incubators within the country. Germany was the country

with more corporate incubators and the UK with more University Incubators, as it can be seen on the following images.

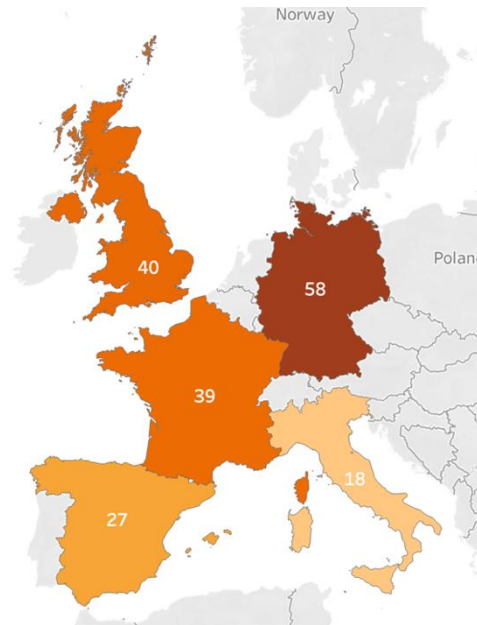


Figure 1. Spread corporate incubators in Europe

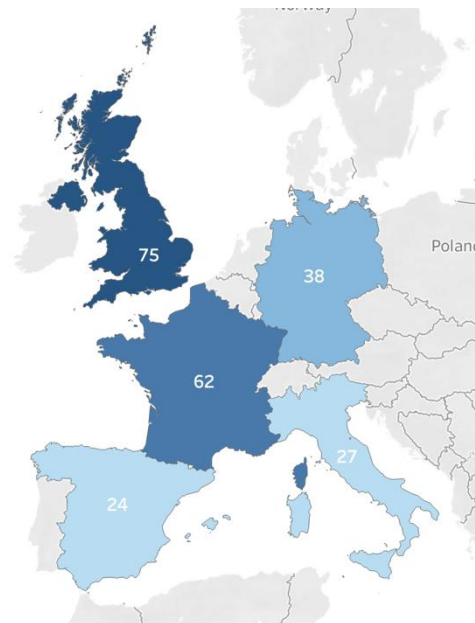


Figure 2. Spread university incubators in Europe

4.2. Analysis of Spanish Incubators

The objective of this section is to perform a deeper study of the distribution and state of incubators in Spain. The analysis was supported by two data sources: The dataset of incubators in 2018 that includes all the population of incubators in Spain (N=215) with the information obtained from the websites and the database Orbis, table "Sample of respondents", collecting only the answers of the respondents to the questionnaire (N = 43).

The analysis can be divided into two principal sections:

1. Analysis of the distribution of Incubators in Spain, focusing on geographic expansion, type and average age of Incubators. For the purposes of the thesis, both datasets (N = 215; N = 43) were analyzed and discussed.
2. Analysis of incubator activities, focusing on the number of applications and the percentage of incubated companies and operating costs. The latter analysis is supported by the single sample database (N = 43), due to the higher level of detail required.

4.2.1. Geographical distribution of incubators in Spain

In order to analyze the distribution of incubators, Spain was divided into regions and counties following the European NUTS classification. Specifically, the country is statistically composed of 17 main regions. The geographic distribution of incubators in Spain is presented in Table 2, and Figures 4 and 5.

Area (NUTS 1)	Population	Sample
North-West	10,3%	4,7%
North-East	10,3%	9,3%
Com. Of Madrid	26,5%	25,6%
Centre	8,8%	14,0%
East	27,4%	20,9%
South	13,0%	16,3%
Canary Islands	3,7%	9,2%

Table 2. Geographic distribution of incubators in Spain



Figure 3. Subdivision of Spanish regions



Figure 4. Geographical distribution of Spanish incubators by region



Figure 5. Geographical distribution of the selected sample (N=43)

Madrid is the country's innovation hub and offers nearly 30% of the Incubator locations. Other important regions for the development of incubators are of course Catalonia, with about 18%, and Andalusia with just over 10%.

4.2.1.1. Concentration of incubators per km²

On the following graph it is shown the Concentration of incubators per km² (km² of the area / incubators within the area).

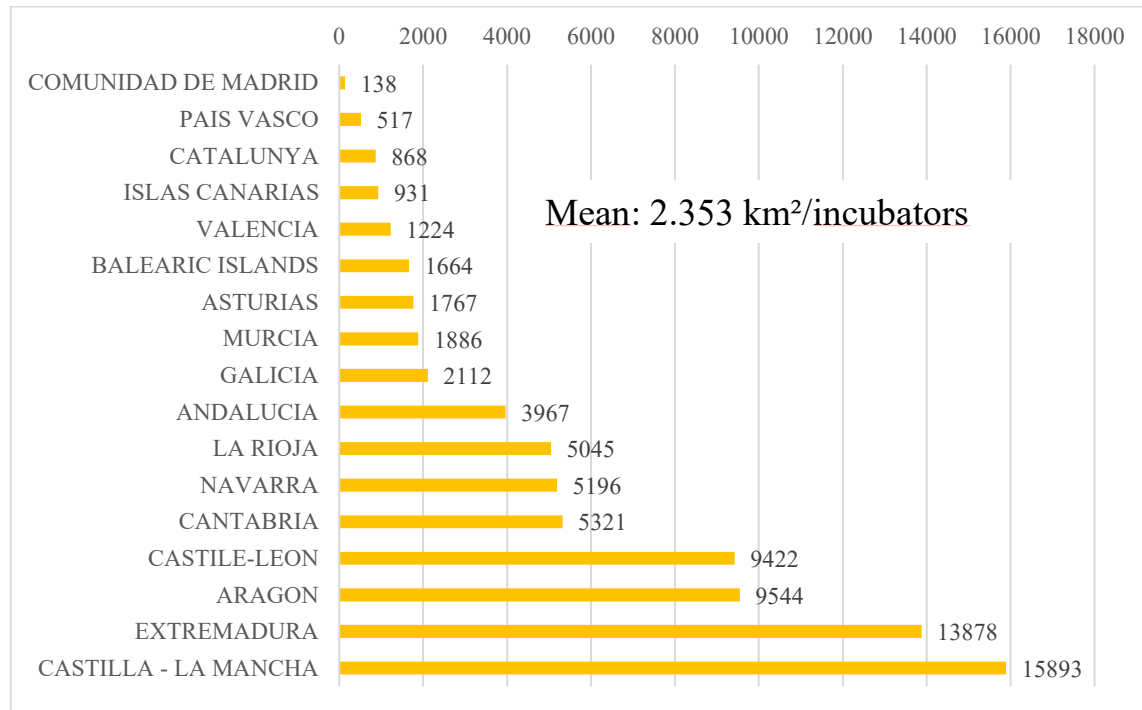


Figure 6. Concentration of incubators per km²

In Spain, on average, there is one incubator every 2.353 km². Comunidad de Madrid is the region with the highest density of incubators per km². At the same time Pais Vasco and Catalunya are the next two regions with more concentration per km². This result supports the fact that Comunidad de Madrid and the East of the country are the regions with a greater number of incubators on the region and the most developed in economic terms. On the other side, the regions with the lowest density of incubators per km² are Castilla-La-Mancha, Extremadura, Aragon and Castile-Leon as they belong to the regions with more area on the country.

4.2.1.2. Concentration of incubators per population

The following graph it is shown the Concentration of incubators per km² (km² of the area/incubators within the area).

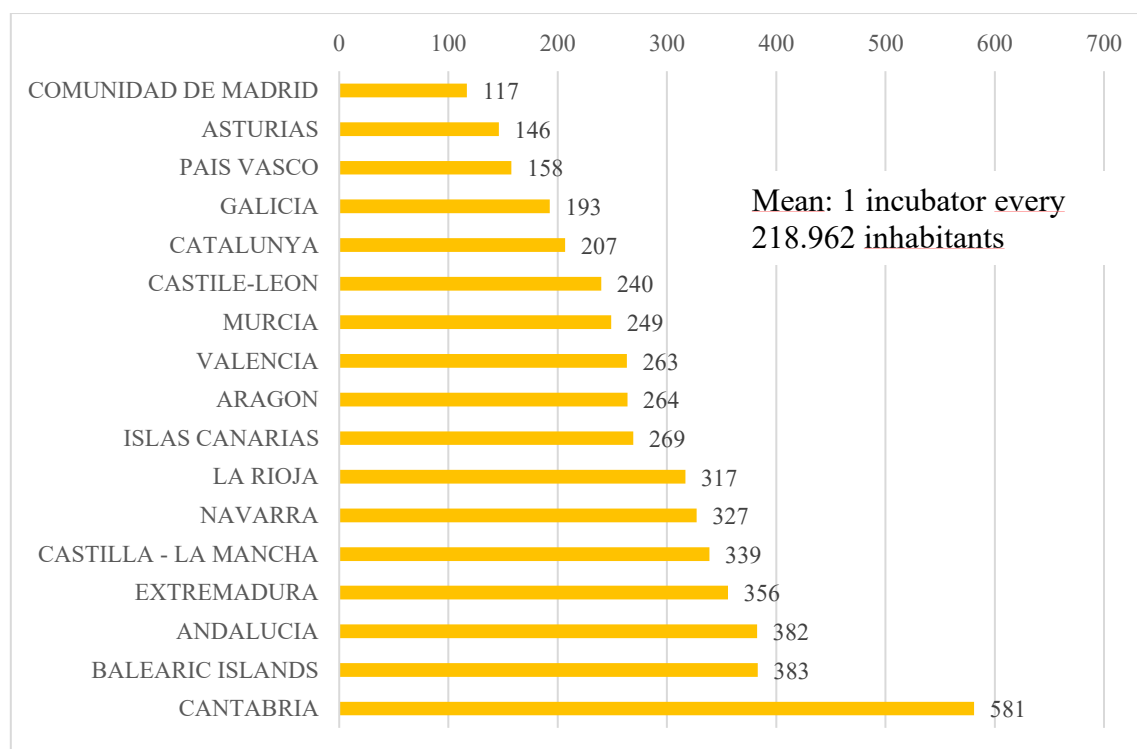


Figure 7. Concentration of incubators per population

In Spain, on average, there is one incubator every 218.962 inhabitants. The regions with the highest number of incubators in relation to the number of inhabitants are Comunidad de Madrid, Asturias, and Pais Vasco. Besides, Comunidad de Madrid and some regions of the Eastside remain on the top of the indicator, such as Pais Vasco and Catalunya, the results change compared to past concentration indicator (incubators per km²). Regions like Castile-Leon that were on the bottom are on this indicator above to the middle of the graph. The Balearic Islands were above the middle of the table on the concentration per km² but on the concentration per population are on the bottom. The region with the lowest number of incubators in relation to the number of inhabitants is Cantabria. This shows that the regions with more number incubators remain in terms of concentration on the top or above the average even per km² or population.

4.2.2. Legal nature of incubators In Spain

Incubators can be classified as public, public-private and private according to their legal nature. The shareholders, in fact, can be private entities, such as a corporation or a single individual, or the majority of them can be composed of a public entity, such as the Government or social associations.

The table below aims to summarize the overall spread of incubators in Spain, based on their legal nature. A similar spread of both legal entities can be observed, with a predominance of private incubators (about 43%). It is in fact important to specify that not only the business incubators but also many of the university ones are owned by private investors.

	Population	%	Sample	%
Public	97	46,60%	22	51,10%
Public-Private	22	10,60%	7	16,30%
Private	89	42,80%	14	32,60%

Table 3. Legal nature of incubators in Spain

4.2.3. Type of incubators in the sample

Based on the SIM classification of incubators that is presented below:

- Business Incubators: Incubators that do not support startups that aim to introduce a positive social impact.
- Mixed incubators: incubators that support 1 to 50% of startups that aim to introduce a positive social impact.
- Social Incubators: Incubators that support more than 50% of startups that aim to introduce a positive social impact.

It was made a division into these three categories. The following table specifically shows the subdivision into these 3 categories of the incubators that are part of the analyzed sample.

	Nº	%
Business incubator	18	41,90%
Mixed incubator	20	46,50%
Social incubator	5	11,60%

Table 4. Type of incubators in Spain

As it can be seen, more than half of the incubators in the sample (58.1%, including both social and mixed incubators) incubate organizations with a significant social impact. But it is clear that most of the incubators are business related.

4.2.4. Incubators – year of foundation

The graph shows the number of incubators founded on each year in Spain.

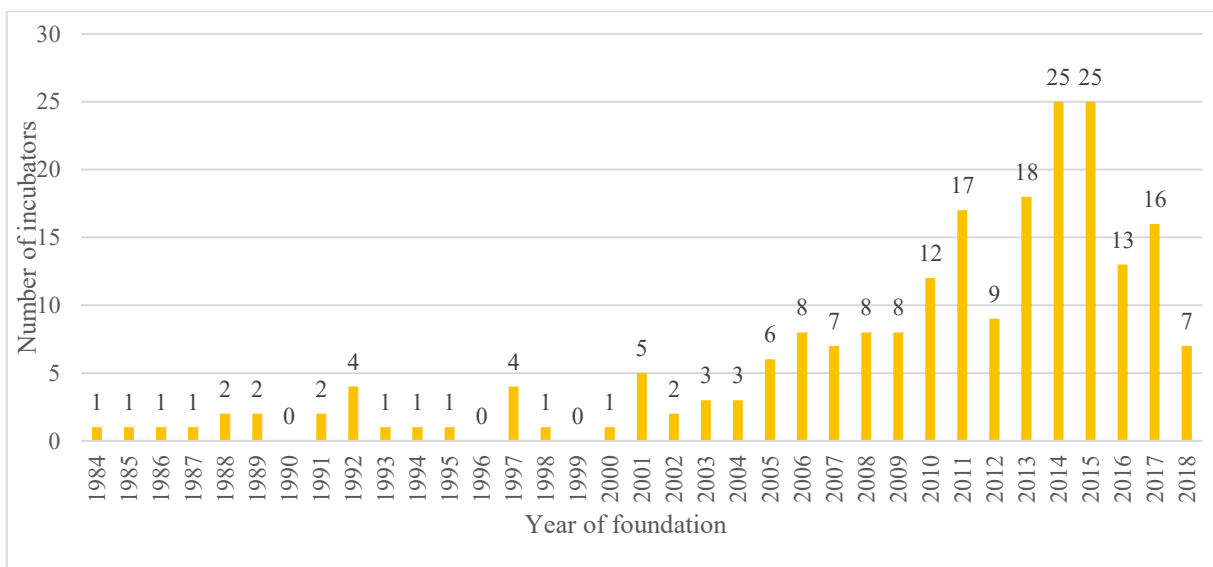


Figure 8. Year of foundation of Spanish incubators

As it can be seen more than half of them were established since 2012. Showing that the incubation phenomenon is growing and recent. Only 7 incubators were created and identified in 2018, it seems that the rate of new incubators is decreasing but the number also can be explained by the fact that newborn incubators may not have shared their data. The peak of new incubators rate was in 2014 and 2015 with 25 new incubators each year.

The sample was 215 incubators and the information was collected from SIM Questionnaire 2019 and combined with the data obtained through the ORBIS database.

4.2.5. Square meters available for incubation activities

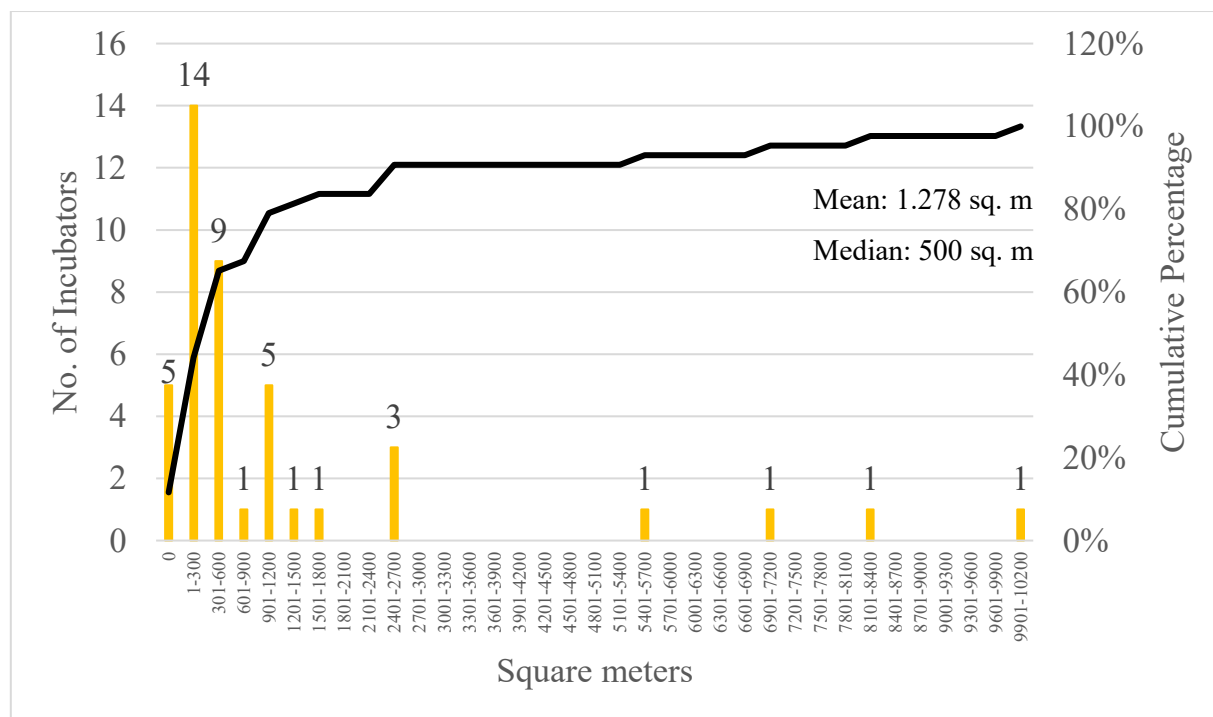


Figure 9. Square meters available for incubation activities

Most of the incubators in 2018 have less than 601 square meters (around 65%). On average incubators provide about 1300 square meters that corresponds a few groups of incubators that offer several square meters. 5 of them that can be defined as virtual incubators do not offer physical space directly. Only 4 out of 43 offer more than 5401 square meters and are the biggest on physical terms.

4.2.6. Specialisation sector

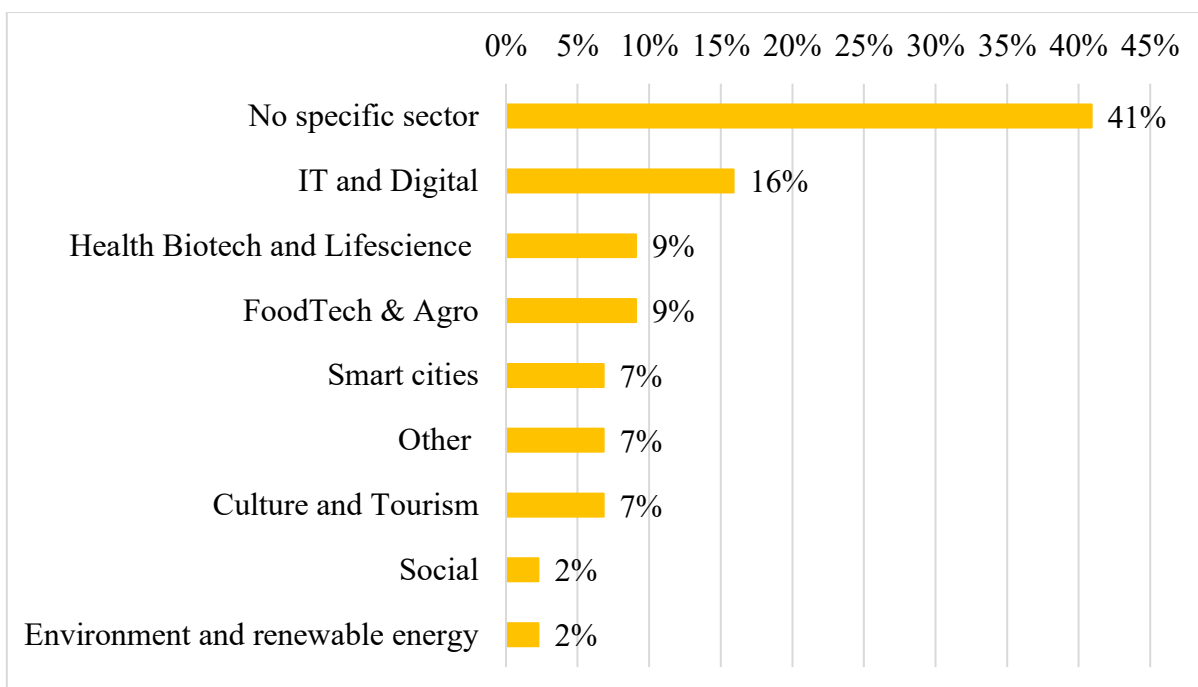


Figure 10. Specialisation sector of Spanish incubators

Near 40% of Spanish incubators do not have any specific sector. In figure 11, it can be appreciated the most popular sectors in which incubators are specialized. The most common ones are IT and Digital, Health Biotech and Lifescience, Foodtech, and Agro. The less popular ones are Environmental and renewable energy and Social. This shows that the sectors are also related to more private interest. The results are based on the data of 43 incubators from the Orbis and SIM 2019 databases.

4.2.7. Number of applications for incubation received

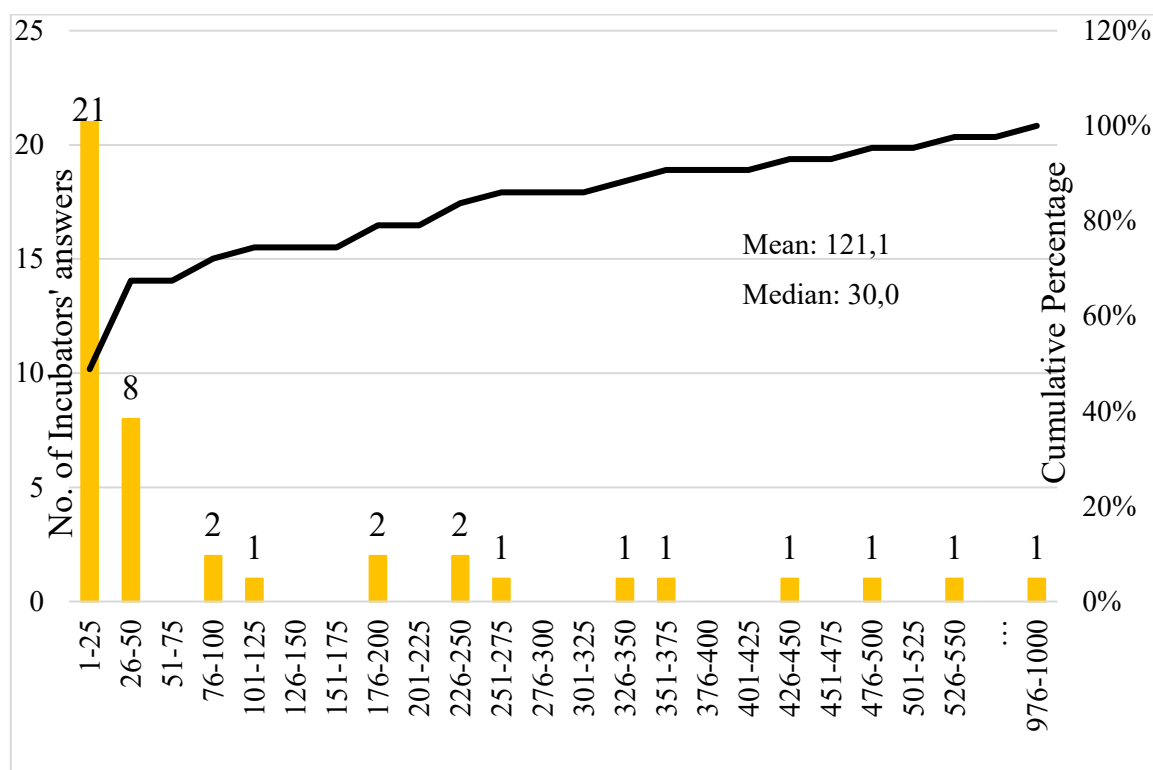


Figure 11. Number of applications for incubation received

The total number of requests received by incubators was estimated on 5026 in 2018. Around 68% of the incubators received less than 50 requests and 21% of them received less than 25 requests. Only 4 of the total sample received more than 400. It has been noticed that there is an asymmetry noticeable in the mean, which is near 4 times the median. The results show that a few numbers of incubators received a lot of applications and a lot of incubators received a few applications.

Frequently, incubators use an “open door” methodology for the selection process in which the application can be submitted at any time during the year.

4.2.8. Entrepreneurial teams and organisations incubated

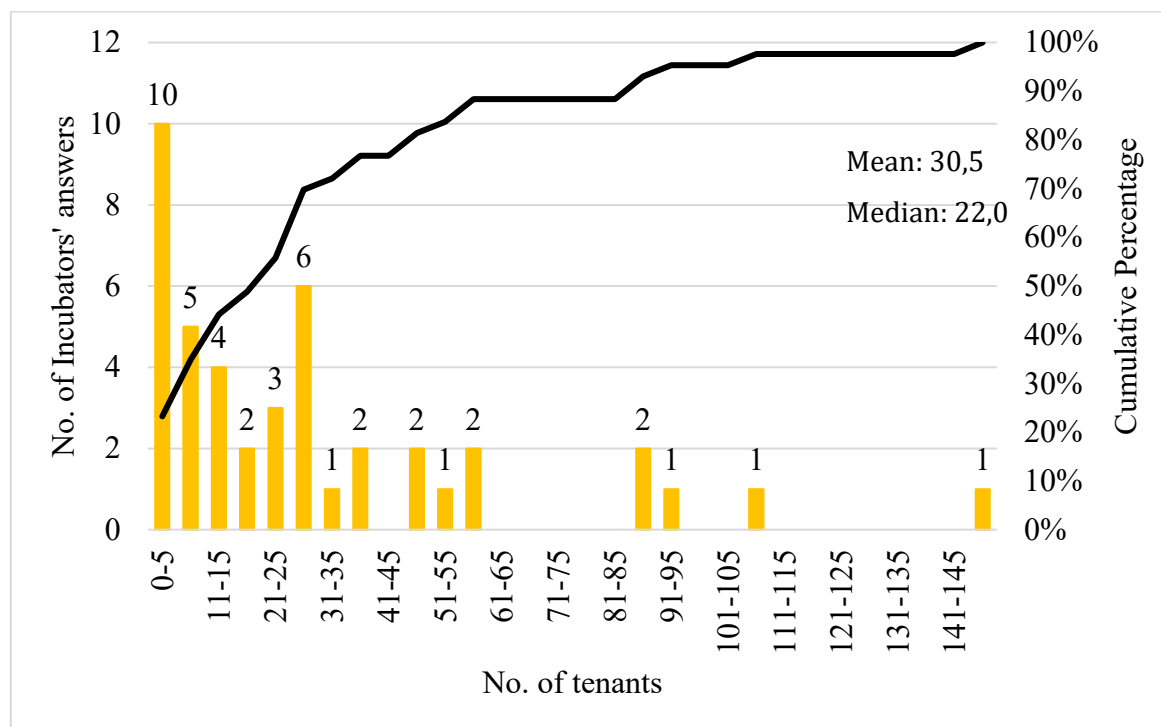


Figure 12. Number of entrepreneurial teams and organizations supported

After entrepreneurial projects present their business plan, only one part is selected to be part of the incubator process: only 1421 (27%) of the total 5206 requests are incubated. This number includes both startups and organizations that received support from an incubator in 2018 and new entrants for 2018 itself. 48.8% of incubators supported no more than 20 organizations in 2018 and only 5 have more than 60. These incubators are the ones that have supported more than 45.1% of the total number of incubated organizations.

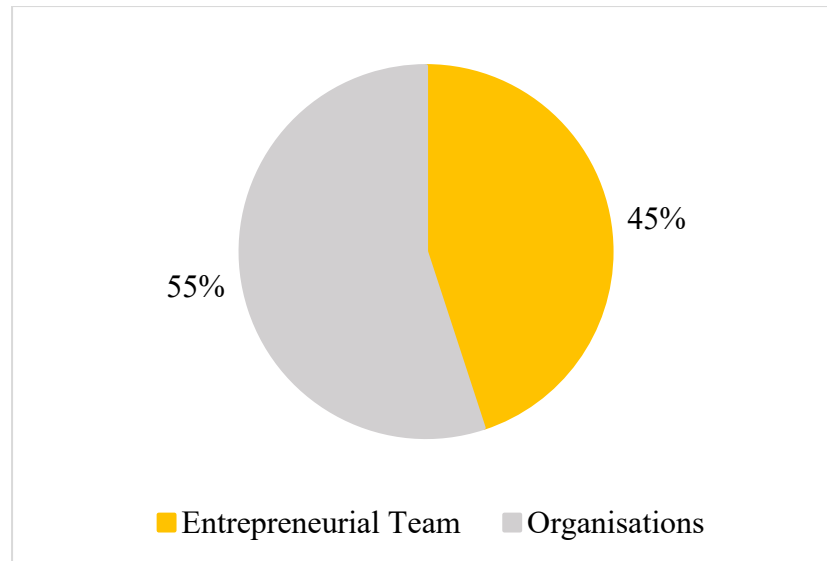


Figure 13. Entrepreneurial teams and organizations incubated

590 out of 1312 of the incubated organizations (45%) have not yet formed a legal entity (entrepreneurial team). On the other side, 722 (55%) are registered companies.

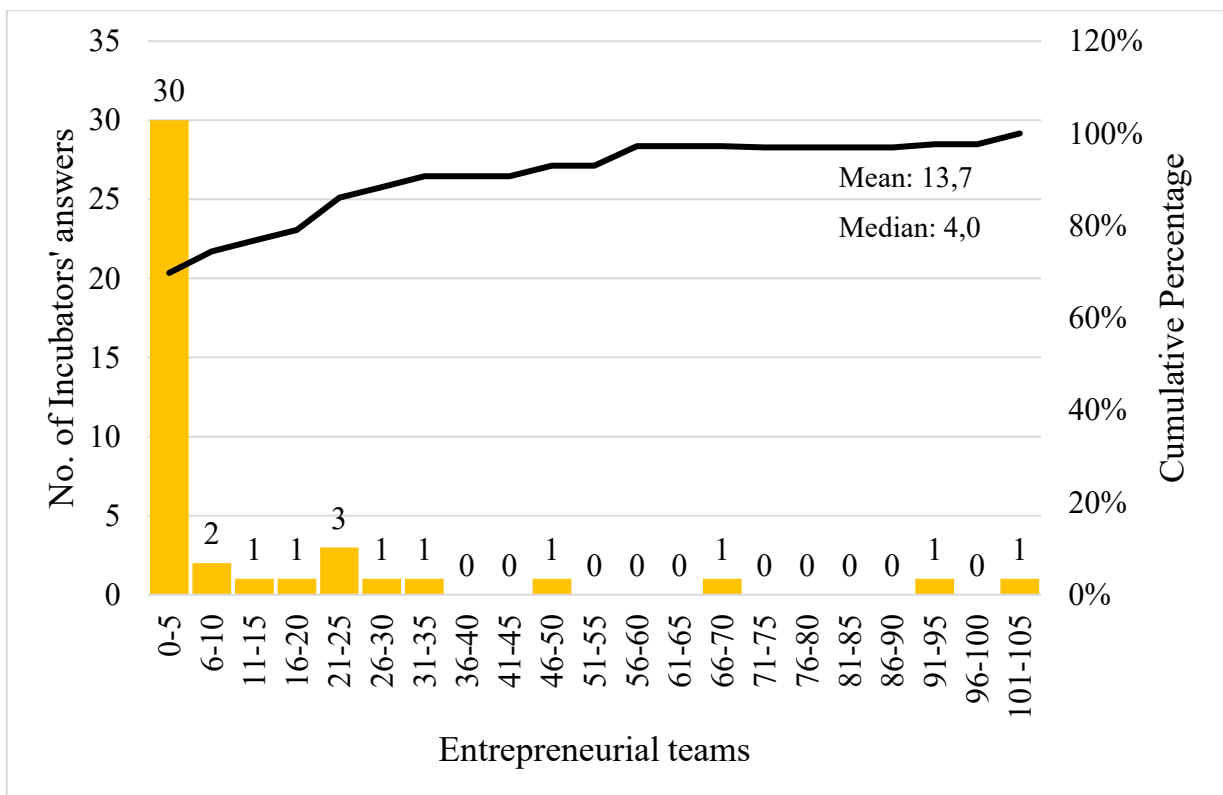


Figure 14. Entrepreneurial teams

74,4% of incubators support less than 11 entrepreneurial teams that have not yet formed a legal entity. Most of the Spanish incubators (65%) support at least one entrepreneurial organization that have not yet establish a legal entity. This show that Spanish incubators are also inclined to support business entities at an early stage.

4.2.9. Services provided by incubators

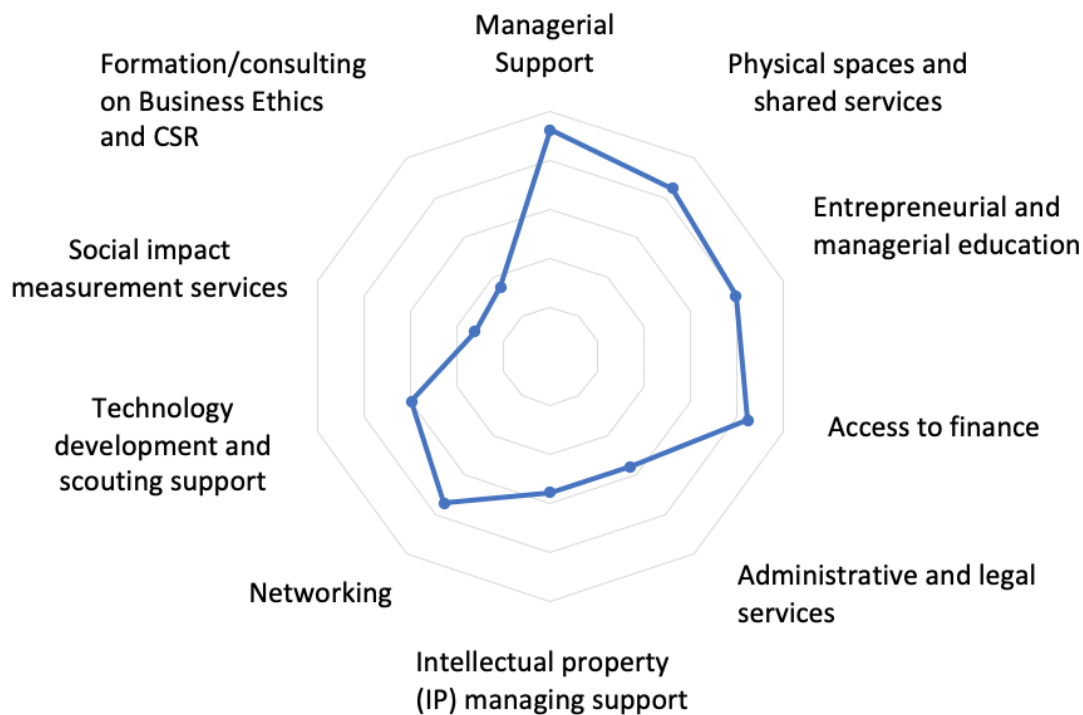


Figure 15. Services provided by incubators

The last graphic shows the relevance of the services offered by Spanish incubators. According to them the most important services are: Managerial support, Access to finance, Physical spaces and shared services, Entrepreneurial and managerial education. The services valuated as quite relevant are: Networking, Technology development and scouting support, Administrative and legal services, Intellectual property (IP) managing support. Finally, the services considered with little importance are: Social impact measurement services and Formation/consulting on business ethics and CSR.

4.2.10. Types of organization incubated

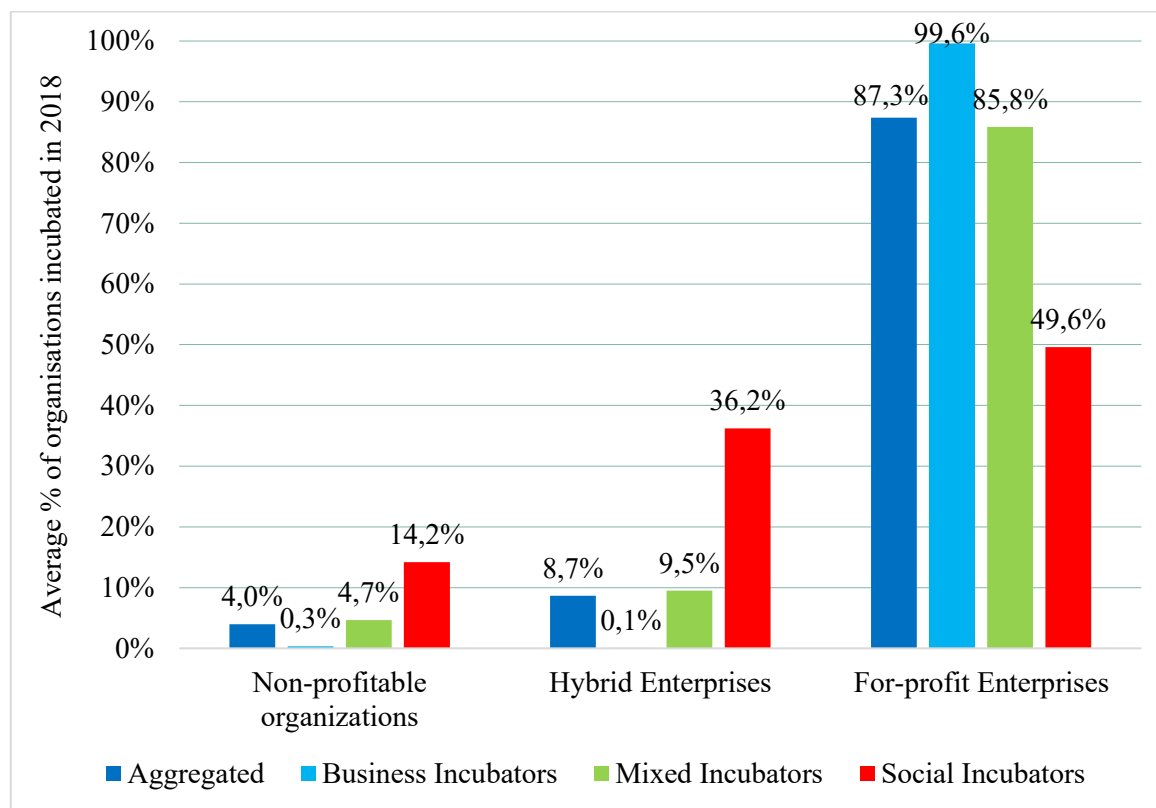


Figure 16. Types of organizations incubated

As it can be appreciated on the figure, social incubators differ from mixed and business incubators in that their portfolio of incubated organizations is largely composed of for-profit enterprises (49.6%), but is also balanced by a good percentage of hybrid enterprises (36.2%) and non-profit organizations (14.2%).

The term “Hybrid Enterprises” refers to all for-profit organizations that direct a portion of their profits to social purposes or that have clearly stated social and/or environmental goals among their main objectives.

Taking into consideration the data referring to the aggregate of the three categories, it is immediately evident that the majority trend is to invest time and resources mainly in for-profit enterprises, rather than on the other two categories. In fact, 87.3% of incubated organizations belong to this category, while, as regards hybrid enterprises and non-profitable organizations, we are talking about much lower numbers, respectively 8.7% and 4.0%.

Business incubators have the greatest influence on this trend, with 99.6% of the incubated organizations being part of the for-profit enterprises' category, with the remaining 0.4% split over the other 2 categories.

As for mixed incubators, the percentages are slightly more diversified, with 85.8% of the incubated organizations belonging to the for-profit enterprises' category, 9.5% to hybrid enterprises and 4.7% to non-profitable organizations.

4.2.11. Access to incubation programs

Regarding the conditions for access to incubation programs, incubators may decide to ask the business teams and organizations considered:

1. A participation fee
2. A percentage of equity of the incubated organization

The following figure show both the data relating to the aggregate of incubators and the breakdown by type of incubator and institutional nature.

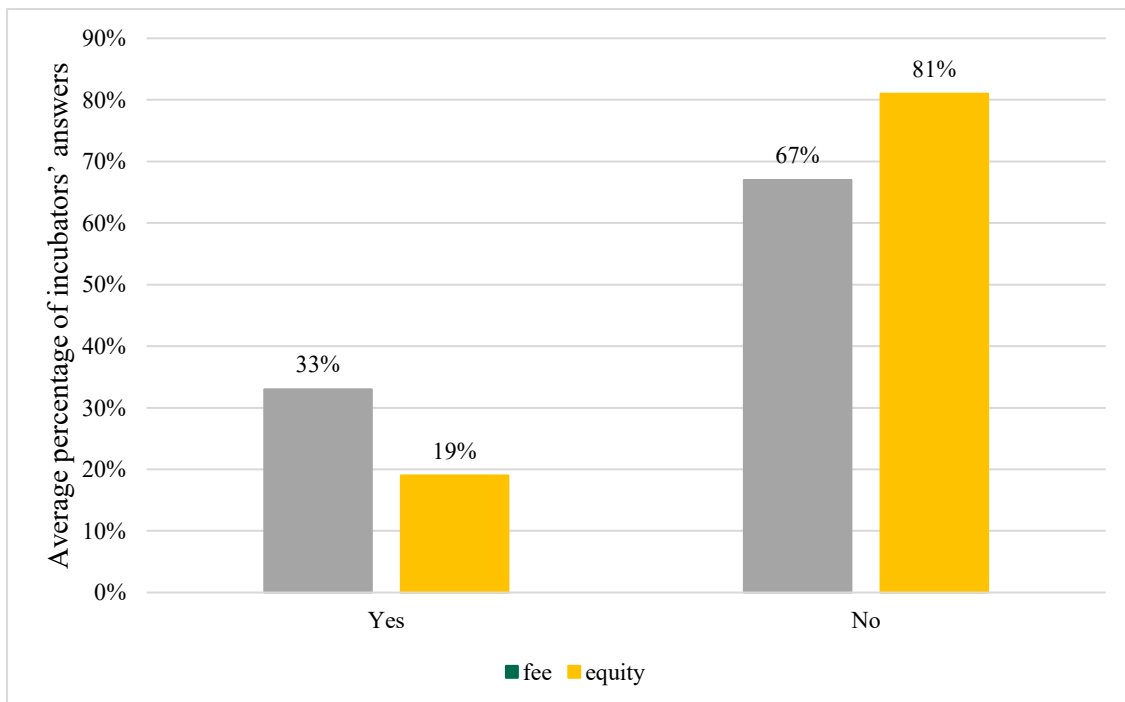


Figure 17. Access to incubation programs- Request fee for access (yes or no)

Approximately 33% of incubators usually apply a participation fee to ensure access to incubation programs. On the other hand, about 19% require a percentage of equity.

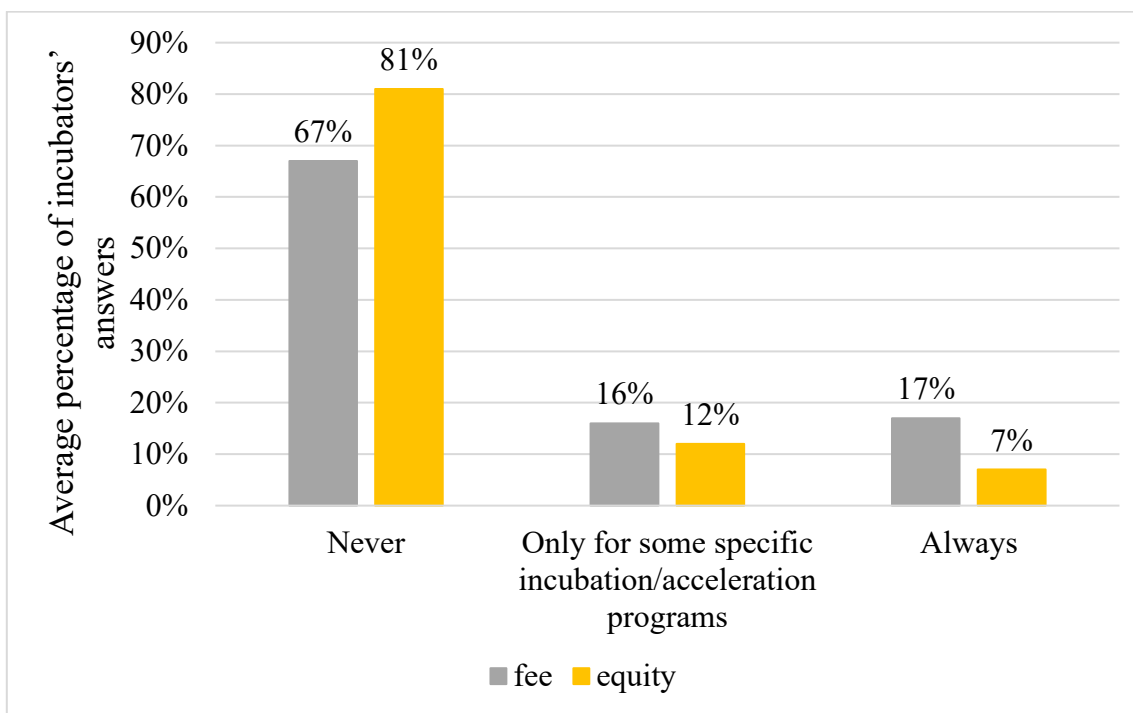


Figure 18. Access to incubation programs- Request fee for access (Never, only for some, Always)

16% of incubators require a participation fee for access to certain incubation programmes. 17% of incubators always require a participation fee. 12% of incubators require an equity percentage for access to certain incubation programmes. 7% of incubators always require an equity percentage.

4.2.12. Equity shares in incubated organizations

Incubators may acquire equity shares of the organizations they incubate through:

1. Direct investment into equity
2. In exchange for performances and services

The two cases are not mutually exclusive.

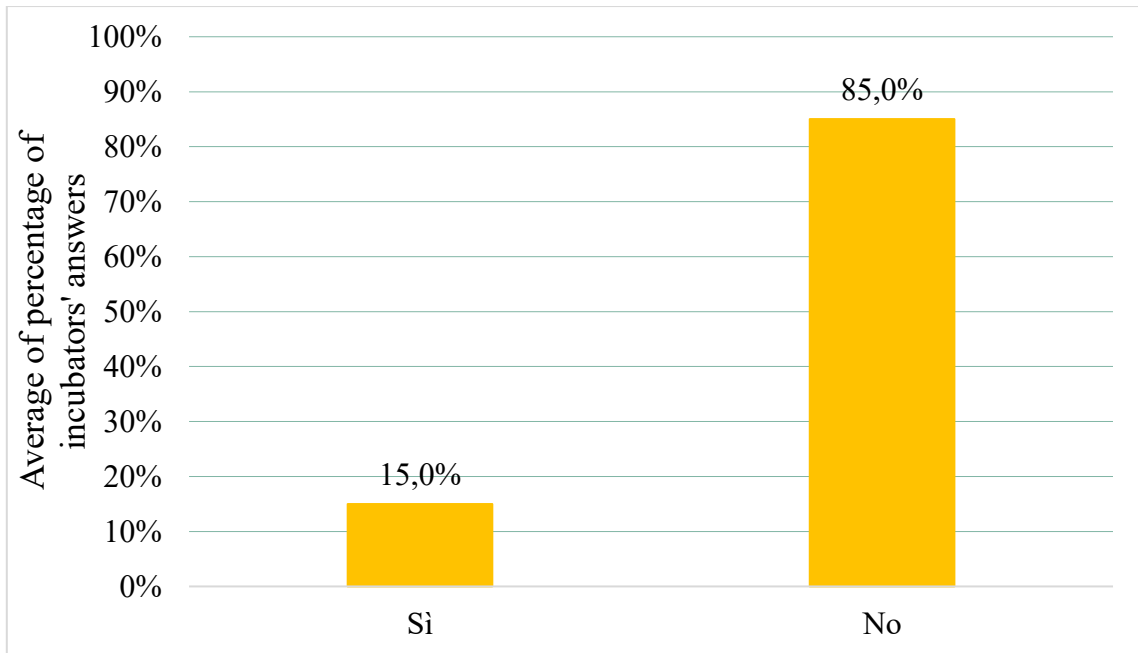


Figure 19. Incubators that hold equity shares

Near 15% of incubators hold equity shares in their incubated organizations.

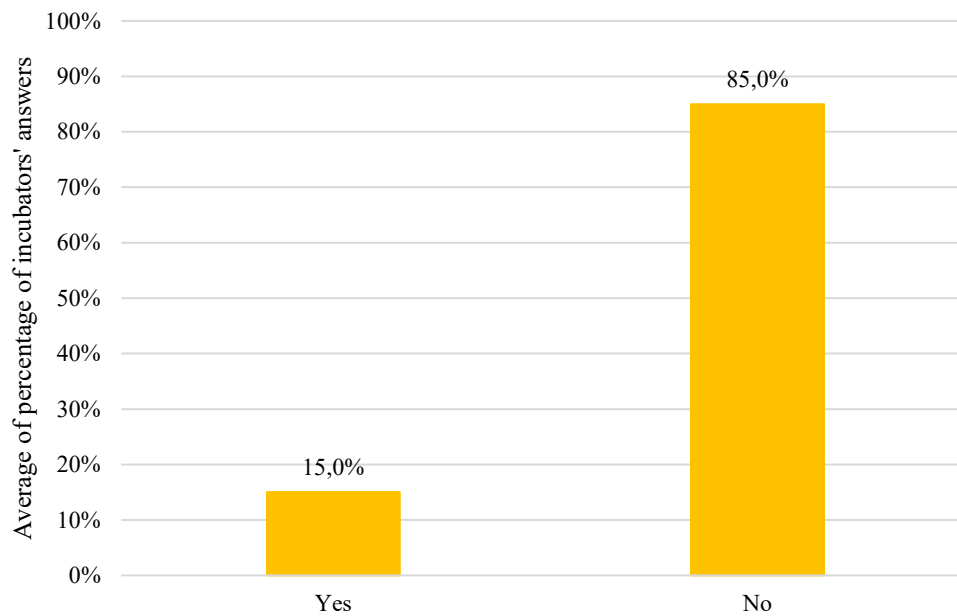


Figure 20. Incubators that hold equity shares – Direct investment into equity

15% of incubators hold equity shares in organizations incubated through direct investment into equity.

Of the 15,0% of the incubators that hold equity shares in the incubated ventures, all of them (100,0%) hold equity shares through direct investment into equity (15,0% of the entire sample).

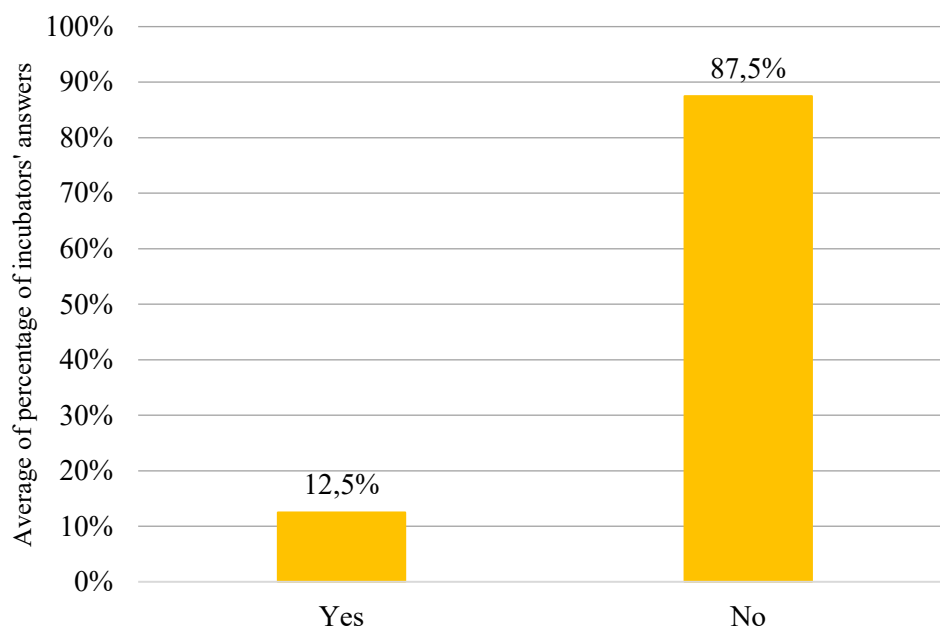


Figure 21. Incubators that hold equity shares – In exchange for performances and services (work for equity)

12,5% of incubators hold equity shares in organisations incubated in exchange for services.

Of the 15,0% of the incubators that own shares in the tenants, more than half of them (83,3%) hold equity shares in the incubated ventures in exchange for performances and services (12,5% of the entire sample).

4.2.13. Incubators events

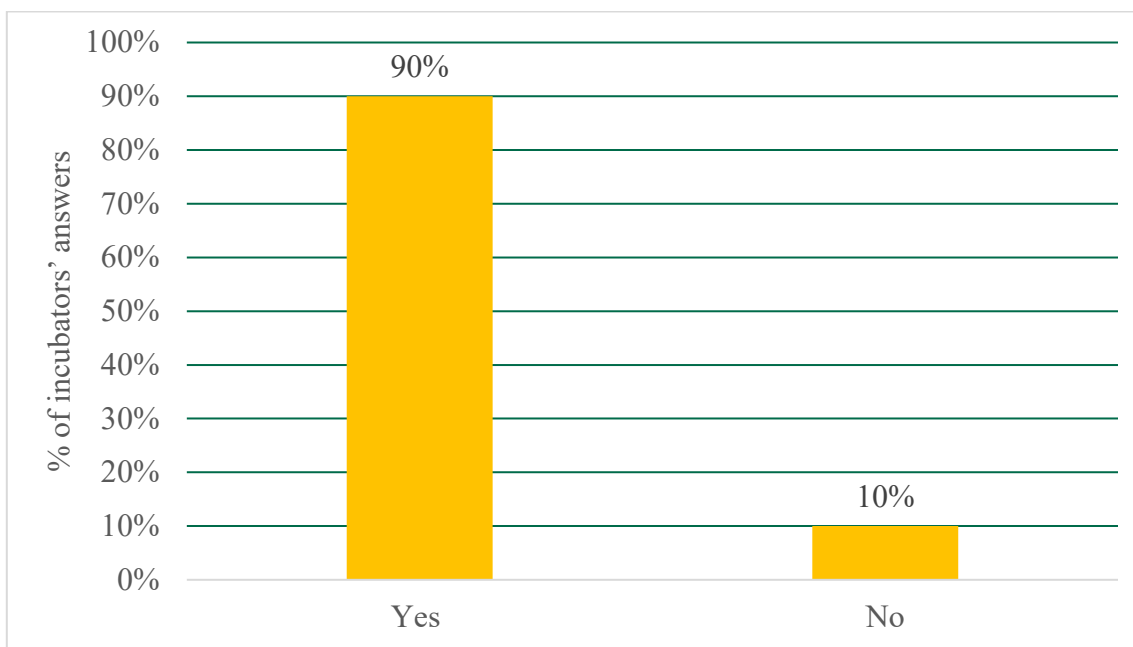


Figure 22. Spanish incubators events

Almost all the incubators organise events, workshops or seminars open also to non-incubated organisations.

The organisation of such events usually represents an opportunity to do network for incubators and their tenants.

4.2.14. Break-down of incubators' operating costs

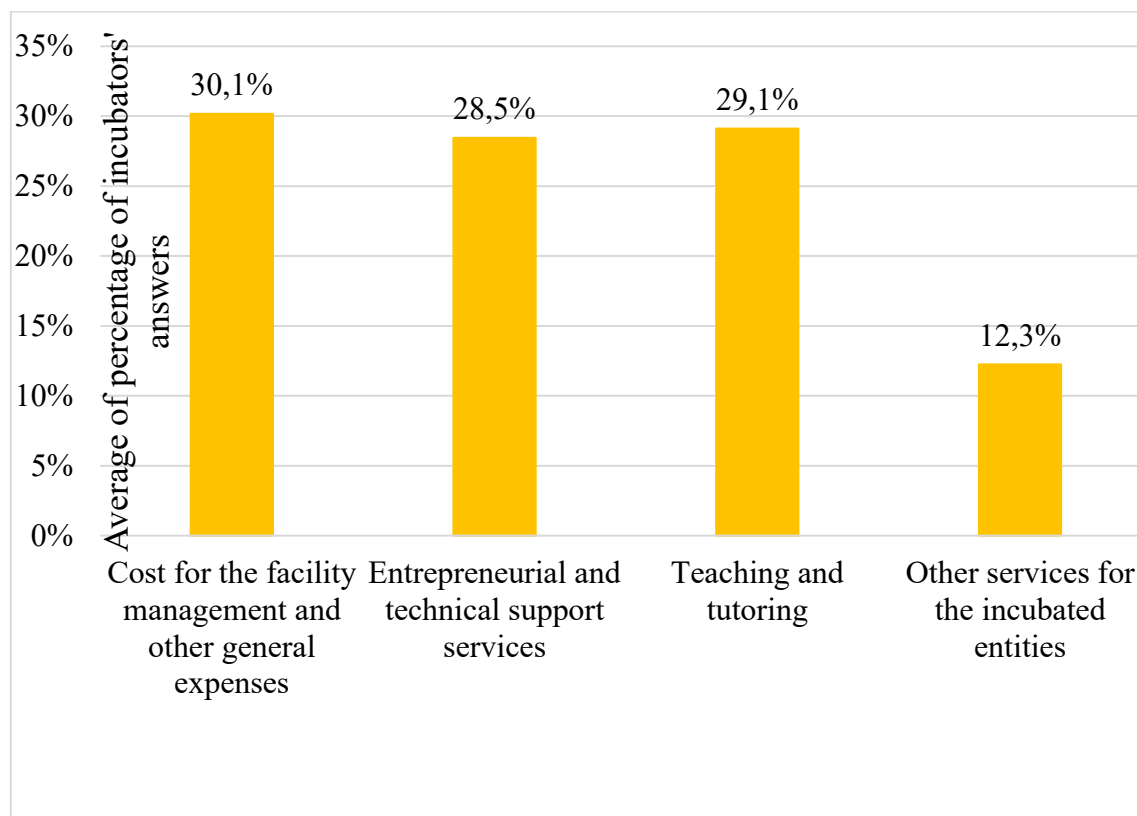


Figure 23. Break-down of incubators' operating costs

Incubators Cost are mainly divided into three categories: first, cost for the facility management and other general expenses that include bills, equipment, and stationery; second, cost for entrepreneurial and technical support services that include legal assistance, administrative, accounting services, marketing, intellectual property, and technological transfer; third, costs for teaching and tutoring include costs incurred for providing mentoring and entrepreneurial education for incubated/accelerated entrepreneurial teams and organisations. The last type of cost but with less impact are other services for the incubated entities.

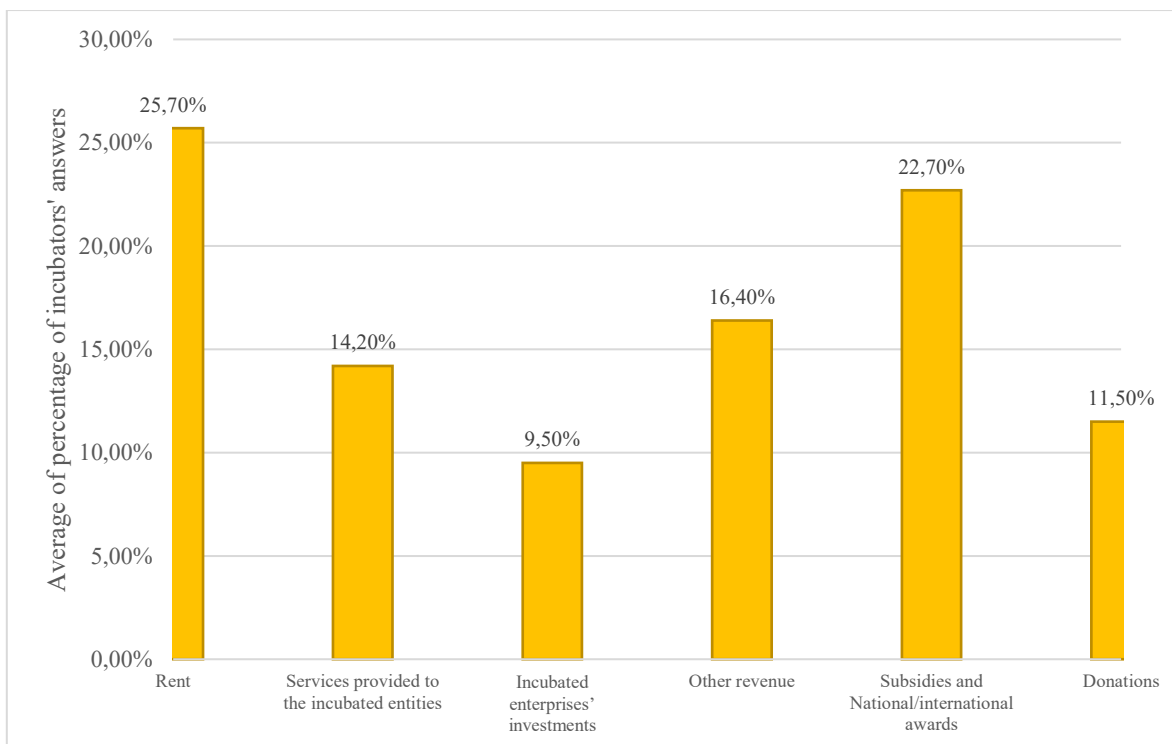


Figure 24. Break-down of incubators' revenue

As it can be noticed on the previous figure, the main sources of revenue for Spanish incubators in 2018 came from rent (25.7%), then subsidies and national/international awards (22.7%). As investment in tenants is not one most common incubator practices only 9.5% of the revenues came from those investments.

4.2.15. Social or environmental impact

The results of the public report showed that the most important sectors in which incubated organizations with significant social or environmental impact operate are social tourism and responsible consumption, health and well-being, sustainable finance and consumer protection, and finally, peace and justice.

Going a little deeper, it has been found that all of the social incubators claim to have metrics or criteria for evaluating the social impact of their tenants. On the other side, only the 43% of the mixed incubators claim to apply these metrics.

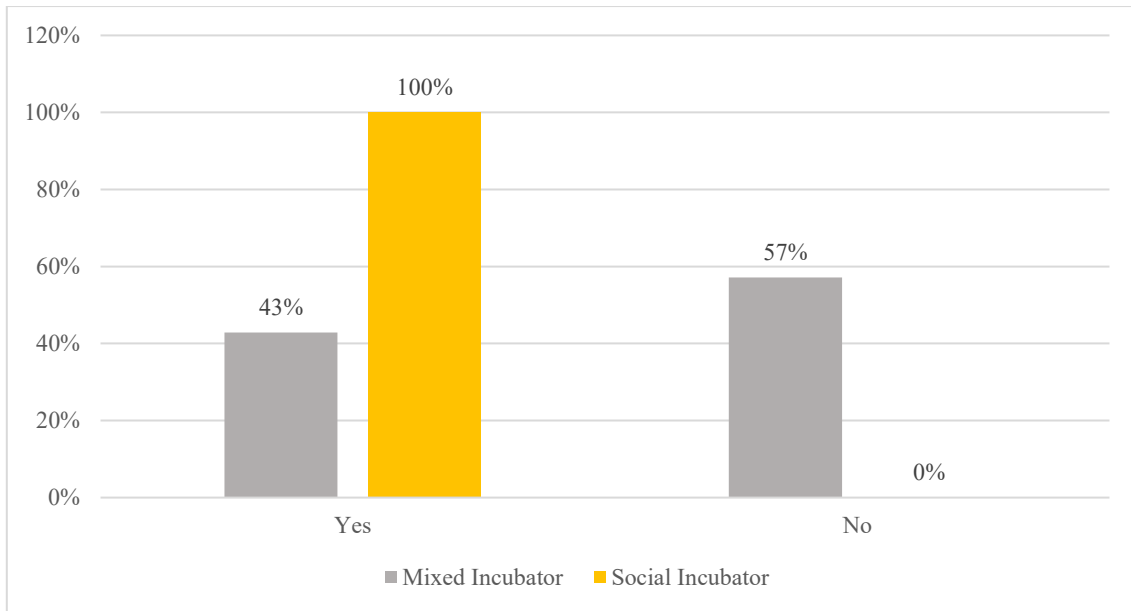


Figure 25. Metrics or criteria for evaluation the social impact of tenants

There are some specific services that are made specially for organizations with a social or environmental impact. The next figure showed that 60% of the social incubators offer specific services, such as ad hoc financial instruments, compared to only 33% of the mixed incubators.

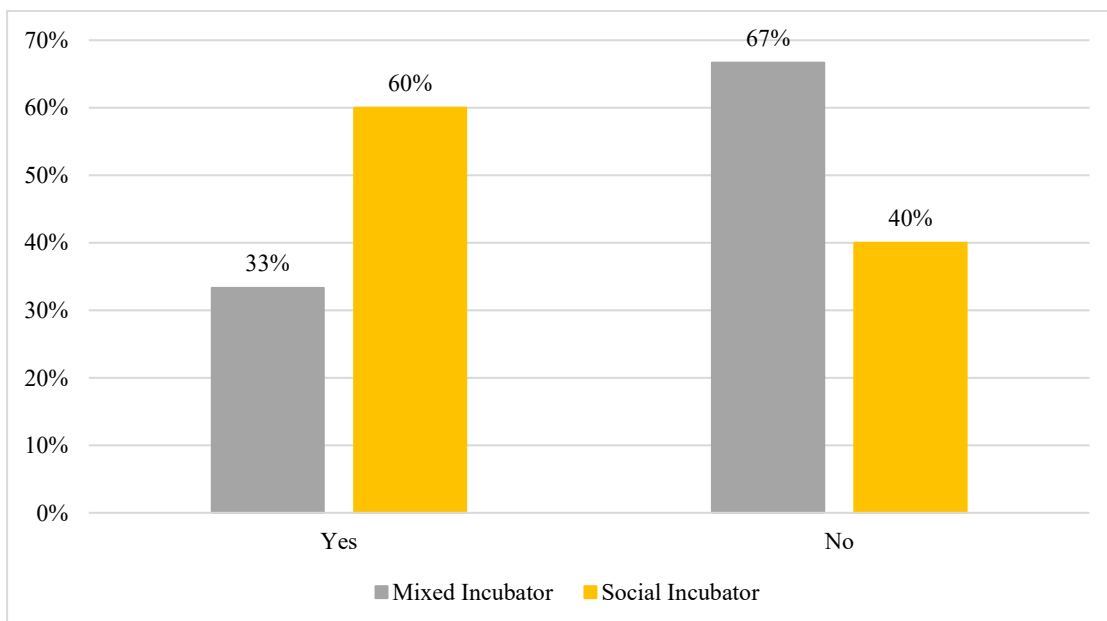


Figure 26 Incubators offering specific services for incubated organizations with significant social impact

It is clear that not all incubators offer business-specific services with the significant social impact they support. This, in part, may be due to the lack of shared metrics to measure social impact, which discourages incubators from implementing ad hoc services for that type of organization.

4.2.16. Other activities

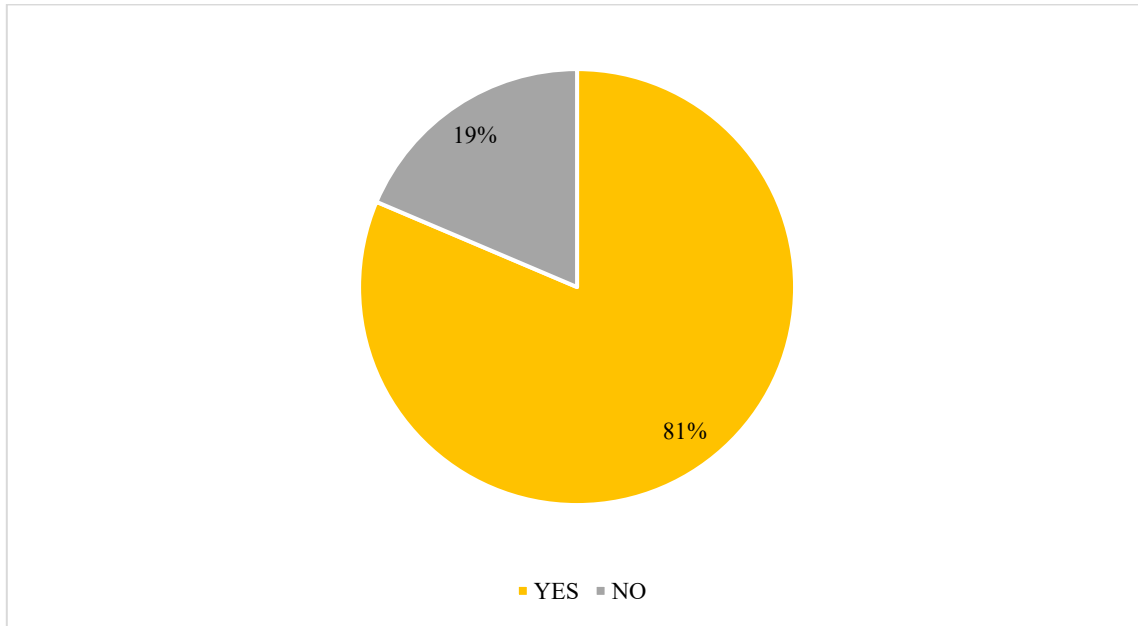


Figure 27. Other activities not related to the activities of incubation/acceleration

Almost all incubators claim to perform other activities in addition to incubation/acceleration. Indeed, 81% of incubators declare to carry out other activities than incubation.

4.2.17. Tenants Journey

The selection process performed by incubators can be made in two ways: the first one is called Help desk in which all candidates can apply at every time of year, and the second one is done with one or more calls or competitions that on very specific periods of time each year so candidates can apply for a limited period of time. It is important to

understand that the two cases are not mutually exclusive. That means that one incubator can perform both selection processes in the same year.

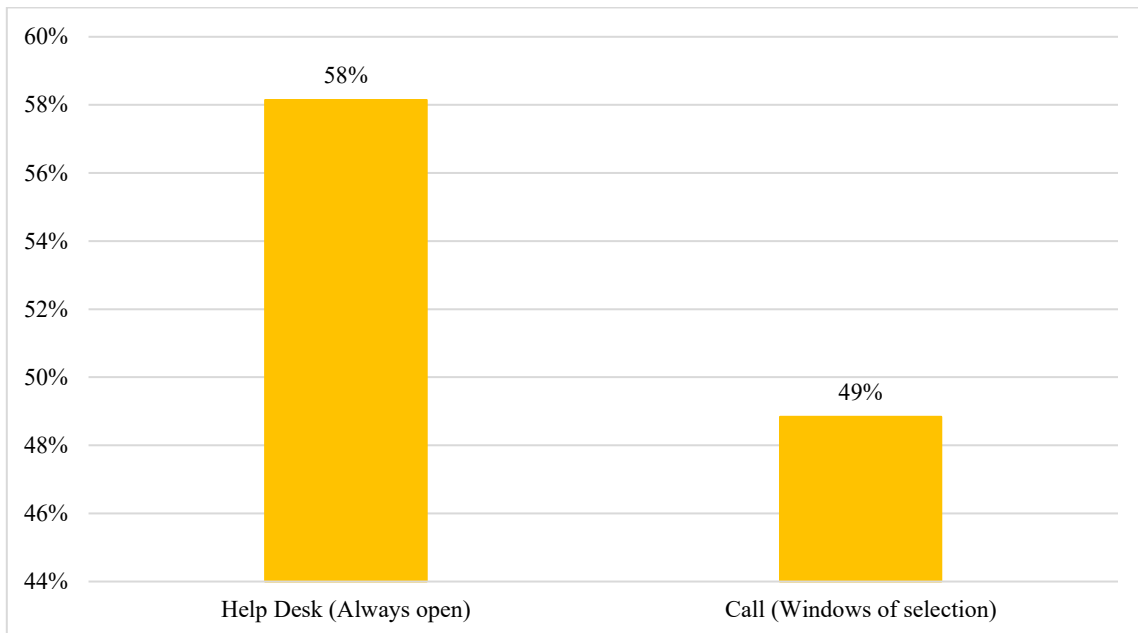


Figure 28. Selection of applications

According with the previous figure 58% of incubators use the Help Desk method making it the most popular. While, 49% of the incubators declare to use one or more call per year. As the sum is not 100% it shows that both methods are not mutually exclusive.

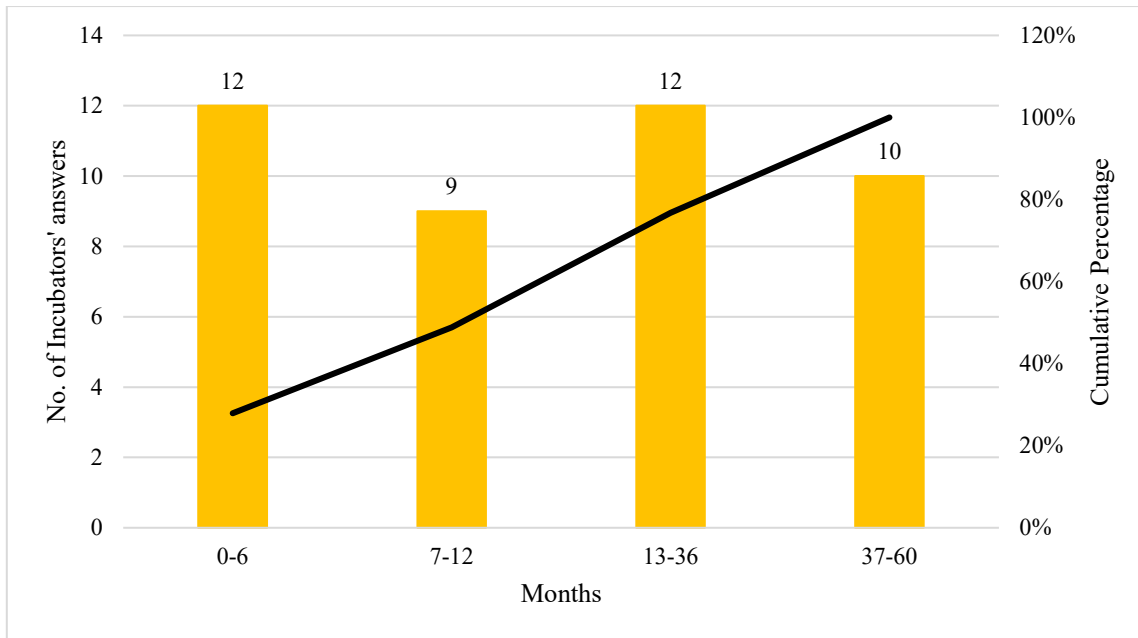


Figure 29. Average time of incubation

Once the selection process has been done and an organization enters the incubation process, the results showed that half of the incubators have an average incubation time ranging between 1 year and 60 months, the for the other half the incubation time is less than a year.

4.2.18. Number of collaborations

As it has been discussed before, the network is a crucial element in the growth of new businesses because it allows the access to new information and valuable resources by lowering search costs (Bank et al., 2017). The following figures can be appreciated the number of collaborations with some partners by formal agreements made by the incubator.

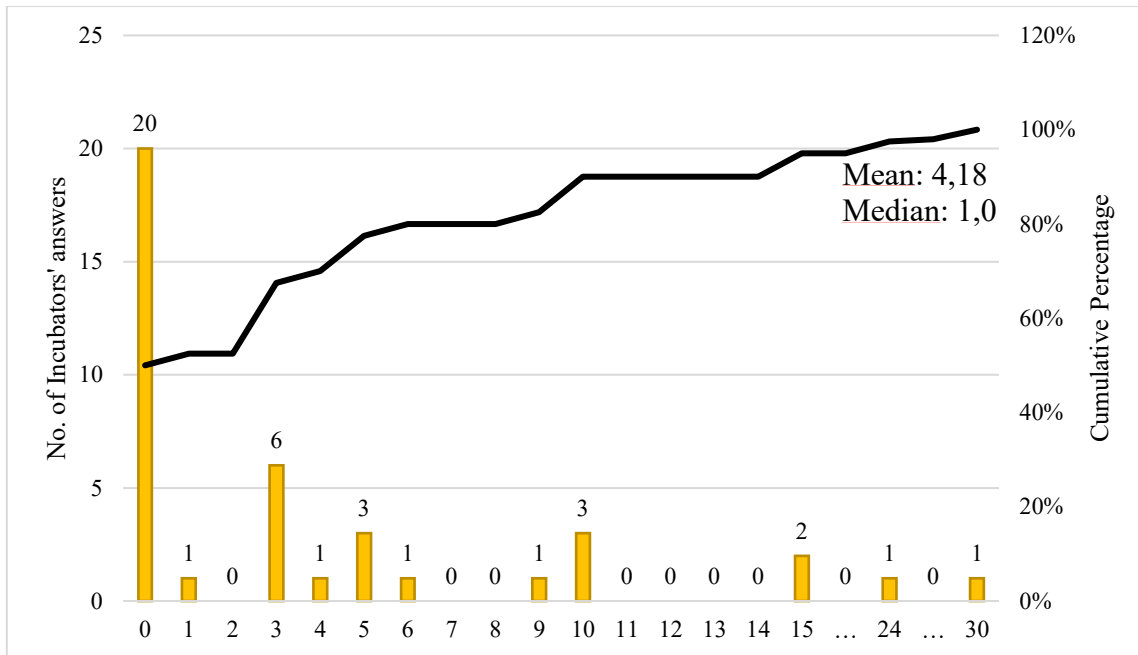


Figure 30. Number of collaborations with investors by formal agreement

According with the results, 50% of the incubators had at least one collaboration with investors by formal agreement which means that the other 50% of them had no formal collaboration with any investor. Most of them (75%) have less than 6 and near the 5 % have more than 15%.

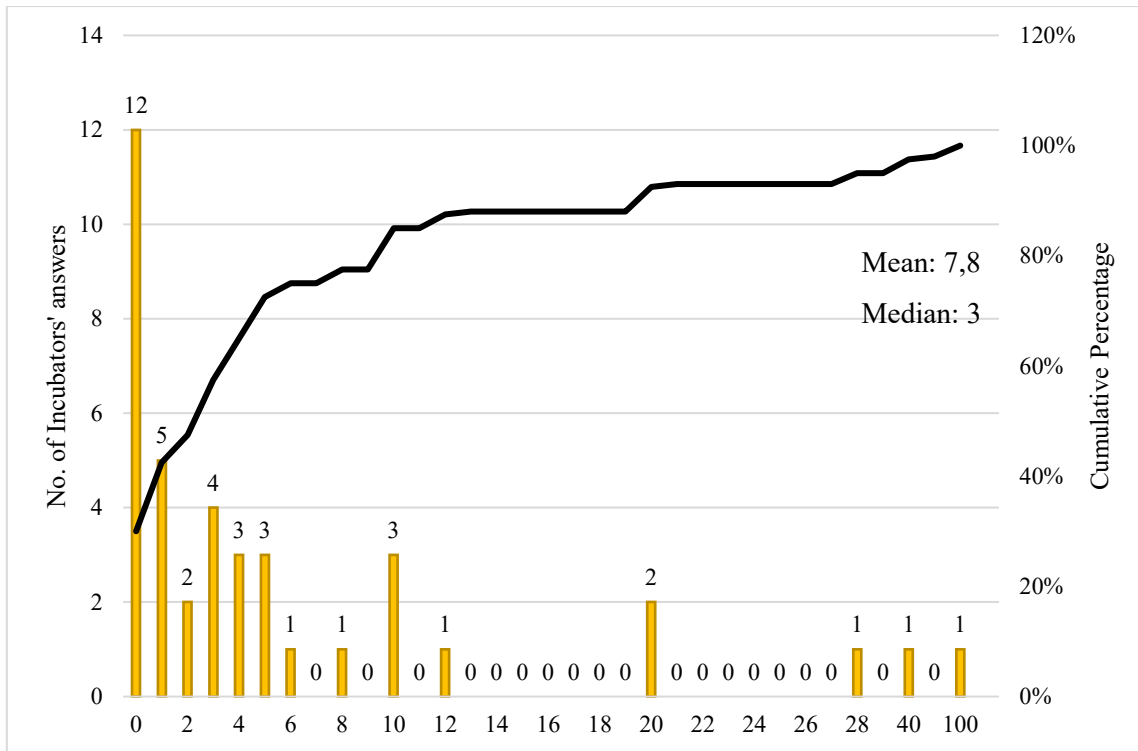


Figure 31. Number of collaborations with corporations by formal agreement

The collaboration with corporations by formal agreements are higher than the investor ones, as the average and median are higher. 70% of incubators had at least one collaboration with collaboration by formal agreement which means that 30% of them had no formal collaboration with any corporation.

4.2.19. Incubators and press

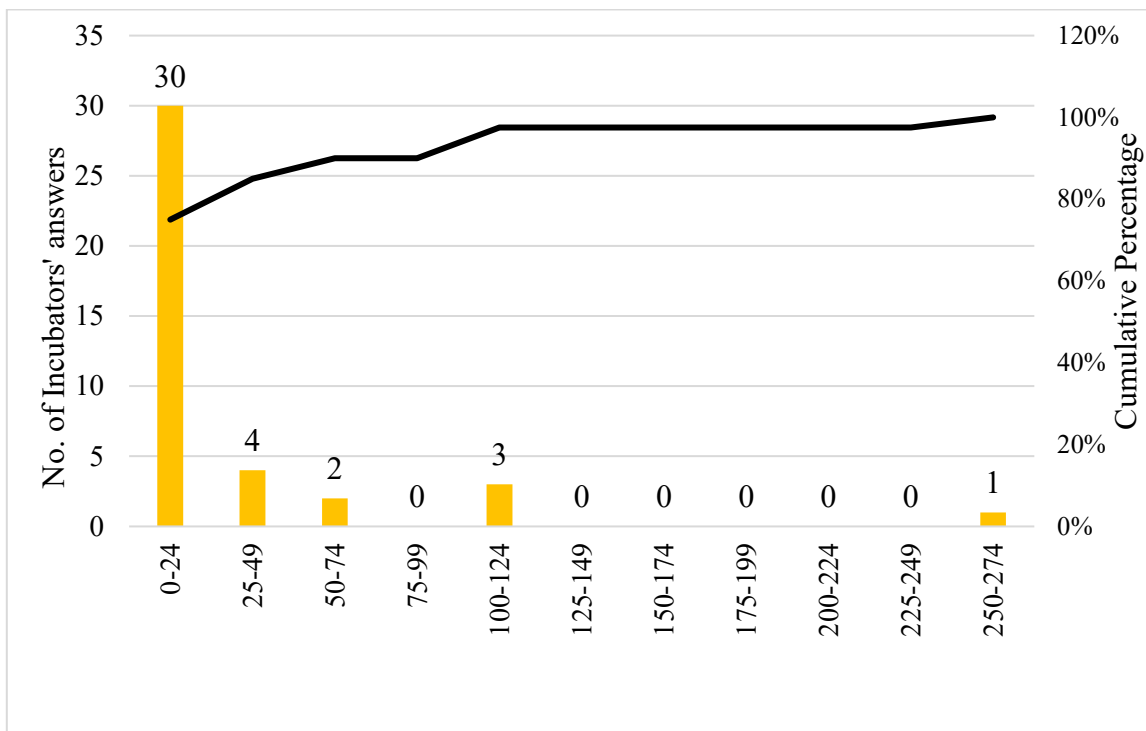


Figure 32. Number of times the incubator and/or incubated teams and start-ups appeared in the press over the past year

Most of the incubators or incubated teams have appeared less than 24 times in the press over the year. 90% of them have appear less than 100 times and just one (2%) have appeared between 250 - 274 times making it the most popular.

5. Conclusion

In this research work carried out together with SIM, the aim was to study the growth and development of incubators in Europe, particularly in Spanish territory. The final objective of the work is to collaborate in the development of a report that presents an understandable view of the state of incubators in Spain including different analyses such as concentration on the territory, available square meters, sector of specialization, selection process, nature of the organizations and acceleration time.

The economic development of Europe and the world is closely linked to the creation, development and sustainability of new business units. Every day it is more difficult for enterprises to stay in the markets due to increasingly strong competition, greater economies of scale, the difficulty of achieving sustainable business models over time, among other variables. This is why the role of incubators / accelerators is so important as they help to achieve the sustainability of new companies / business units. Due to this situation, it is essential that incubators stay updated in providing ecosystems that facilitate the development of enterprises, in sustainable business models, strategies that develop competitive advantages (Pauwels et al., 2016), and their services (Mian et al., 2016). al., 2016).

The importance of incubators is recognized by many important actors in the economy such as universities, companies and governments. All these actors have invested time and resources to increase the diffusion of incubators in order to broaden knowledge and technological development, to improve the marketing and development of novel products as well as the development of the economy and the creation of employment.

In Europe, incubators have more presence every day and each year more resources are invested to expand their network. The United Kingdom, France and Germany are the countries with the highest GDP in the region and in the same way they are the ones that lead with the largest number of incubators and the best quality programs. In first place is France with 284 incubators, followed by the United Kingdom and Germany with 247. The

main difference is that in the United Kingdom there are a greater number of university incubators while in Germany there are more corporate incubators.

There are 215 incubators in Spanish territory. There is a balance between corporate incubators (12.7%) and university ones (11.30%). However, it stands out that Spain is the one with the fewest university incubators compared to the other countries studied.

Madrid is the country's innovation hub and offers nearly 30% of the Incubator locations. However other regions and cities like Catalonia and Barcelona, Andalusia and Sevilla, Malaga and Valencia are raising their incubators diffusion.

Of the total of 215 incubators, a total of 43 responses were obtained for the survey carried out in collaboration with the SIM team. The results obtained after cleaning the data show that in Spain there is one incubator every 2353 km². Madrid, País Vasco and Catalunya are the regions with the highest concentration in terms of area. Regarding the concentration by inhabitants, variations were found in the results, because although Comunidad de Madrid continues to be the one with the highest concentration along with País Vasco, Asturias is among the first three with the best performance in this indicator. It was additionally found that for every 218.962 habitants there is one incubator.

The results allow to support what was found in the bibliographic review regarding the recent growth that the incubator phenomenon has had in Spain. About half of the incubators were created since 2012 and in 2014 and 2015 there was a peak in the creation of these organizations (Funcas, 2019). Additionally, it was found that about 65% of the sample has less than 601 square meters of facilities, of which 5 are virtual and do not offer physical spaces for incubation activities.

About 40% of Spanish incubators do not have a defined sector. The most popular sectors were found to be IT and Digital, Health Biotech and Lifescience, Foodtech, and Agro. The above allows to know which are the sectors most in demand by organizations and show a trend of how the economy works in this country. Most incubators (50%) receive less than 50 requests to enter incubation programs. Out of a total of 5206 applications, only 27% managed to be selected to enter the programs. Of the total number of incubated companies, only 55% were established as a legal entity, which shows that Spanish incubators are also inclined to support business entities at an early stage.

The access conditions are very favorable for the ventures, as only 33% of the incubators require a participation fee and 19% a percentage of equity of the incubated organization. 15% of incubators hold equity shares in their incubated organizations, of which 100% hold equity shares in organizations incubated through direct investment into equity and 83.3% of incubators hold equity shares in organizations incubated in exchange for services.

Incubators Cost are mainly divided into three categories: first, the cost for the facility management and other general expenses; second, the cost for entrepreneurial and technical support services that include legal assistance, administrative, accounting services, marketing, intellectual property, and technological transfer; third, costs for teaching and tutoring include costs incurred for providing mentoring and entrepreneurial education for incubated/accelerated entrepreneurial teams and organizations. The main sources of revenue for Spanish incubators in 2018 came from rent (25.7%), then subsidies, and national/international awards (22.7%). As investment in tenants is not one most common incubator practices only 9.5% of the revenues came from those investments.

The results of the public report showed that the most important sectors in which incubated organizations with significant social or environmental impact operate are social tourism and responsible consumption, health and well-being, sustainable finance and consumer protection, and finally, peace and justice. However, it was found that not all social and mixed incubators offer business-specific services with the significant social impact they support. This, in part, maybe due to the lack of shared metrics to measure social impact, which discourages incubators from implementing ad hoc services for that type of organization.

5.1. Advantages of research

This research sought to contribute to the knowledge development of incubators in a limited context in time and referring to a geographical area. The above to create models for the management of innovative and entrepreneurial environments.

The research had the collaboration of several international and local entities and the SIM research group, which made it possible to draw a line of research that was able to analyze the distribution and diffusion of incubators in some European countries. Consequently,

the possibility of having a global vision of the state of incubators in Europe was achieved. At the same time, it allows each country to be compared in terms of entrepreneurship and innovation, compares policies, results, strengths, and weaknesses so that each country knows its situation better and can improve its entrepreneurial situation. Equally, local governments can promote new policies that allow promoting the weakest aspects according to the results of the research and evaluate the results as the research is repeated each year.

The research focused on investigating with special interest about social entrepreneurship generated a lot of interest from entrepreneurs and investors. Being able to solve real problems of society and the world, through entrepreneurship initiatives, every day calls for more sectors of society such as investors, universities, private companies. The final objective is to potentiate ideas that can achieve a high social and environmental impact. Finally, it is highlighted that the research managed to evaluate many variables that allow measuring not only the state but also the performance of the Spanish incubators. This allows the country and its incubators to know what their current state is, how they can improve and how they project into the future as concluded by the research.

5.2. Limitations and Further Analysis

Despite the great advances in research, certain limitations are pointed out.

The first one, is that this research focuses on Spain, which is a very complex and changing context. Because this is the first research carried out in Spain, it becomes more complex to understand the economic, entrepreneurship and innovation context within the country. Especially since not all the people on the team are located within the country or speak the Spanish language.

Because the research is led by an Italian university, many individuals and organizations prefer that these initiatives be led by a local universities or entities. The second limitation that was found is that many managers preferred to work in collaboration with local researchers rather than those of the SIM team, making harder to obtain responses.

A third limitation was the COVID-19, since part of the investigation had to be carried out while we were in a pandemic, making communication between researchers more complex, especially during the phase of computing the results and the analysis of it.

Finally, to understand the context of entrepreneurship and innovation in Spain, it is necessary to analyze various actors that are not included in this research. Universities, private companies, government, international entities and many other organizations affect the entrepreneurship context in Spain. Consequently, it is important to have a broader and more conclusive vision, using longitudinal data that allow us to expand and deepen what was found in this research.

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Appendix

Incubators and accelerators in Spain - Questionnaire

Informe sobre el impacto de las incubadoras y aceleradoras españolas - Cuestionario 2019

Instrucciones: Para todas las respuestas considere los datos de 2018. Si en su organización también se llevan a cabo otras actividades, por favor refiérase solamente a la actividad de incubación/aceleración.

Datos personales

¿Cuál es el nombre y la razón social de la incubadora/aceleradora?	
¿Otras actividades no relacionadas con las actividades de incubación/aceleración también se llevan a cabo en su organización ² ?	SI / NO
¿Cuál es el año de establecimiento de la incubadora/aceleradora?	
¿Cuál era el número medio de empleados (ETC) en 2018? (refiérase a las actividades de incubación/aceleración sólo en todo el cuestionario)	
¿Cuántos metros cuadrados tiene disponibles para actividades de incubación/aceleración?	

Impreso

¿Cómo seleccionó en 2018 las solicitudes de los equipos empresariales ³ y organizaciones ⁴ interesados en sus servicios de incubación/aceleración? (respuesta múltiple)		
a	un "Help Desk" abierto (las solicitudes pueden enviarse en cualquier momento)	

² Por ejemplo, un Parque Científico responderá "SÍ" si también alberga empresas y centros de investigación ya establecidos. Como se indica en las "instrucciones" anteriores, estas "otras" actividades no deben considerarse en las respuestas al cuestionario.

³ Los equipos emprendedores son ideas y proyectos de negocio que aún no tienen personalidad jurídica.

⁴ Las organizaciones son entidades jurídicas establecidas como entidades con fines de lucro, híbridas y sin fines de lucro.

b	con una o más convocatorias / concursos al año (las solicitudes pueden presentarse en un plazo limitado)	
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¿Durante cuánto tiempo, de media, los equipos emprendedores y las organizaciones empresariales utilizan sus servicios de incubación/aceleración?		
a	Menos de 3 meses	
b	De 3 a 6 meses	
c	De 6 meses a 1 año	
d	De 1 año a 3 años	
e	De 3 a 5 años	
f	Otro:	
Indique cualquier área de especialización (por ejemplo, deporte, tecnología limpia, aeroespacial, digital):		

¿Pide usted una cuota de participación para acceder a sus programas de incubación/aceleración?	Siempre Para algunos programas de incubación/aceleración Nunca
Para acceder a sus programas de incubación/aceleración, ¿usted solicita un porcentaje de capital?	Siempre Para algunos programas de incubación/aceleración Nunca

¿Cuántas solicitudes de incubación/aceleración recibió en total en 2018?	
¿Cuántos equipos y organizaciones de negocios incubaron/aceleraron en 2018? (teniendo en cuenta los equipos y organizaciones existentes que usted siguió apoyando en 2018 y los nuevos participantes en 2018)	
¿Cuántos equipos de negocios que usted incubó/aceleró en 2018 aún no habían formado una organización (aún no habían creado una entidad legal) en 2018?	

¿Cuántas organizaciones establecidas incubaron/aceleraron para cada uno de los siguientes tipos en porcentaje para 2018?		
a	Organizaciones sin fines de lucro	

b	Empresas híbridas (por ejemplo, empresa social innovadora Srl, B-corp, empresa social) ⁵	
c	Impresionar con fines de lucro	

¿Apoya a equipos y organizaciones emprendedoras con un impacto social significativo?	Sì	No
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⁵ Las empresas híbridas son aquellas que, aunque con ánimo de lucro, destinan parte de sus beneficios a fines sociales o tienen objetivos sociales y/o medioambientales explícitos entre sus objetivos.

⁶ Son organizaciones que introducen la innovación social, es decir, "una nueva solución a un problema social que es más eficaz, eficiente, sostenible o simplemente que las soluciones existentes y cuyo valor creado madura principalmente para la sociedad en su conjunto, más que para los particulares". Pueden ser tales compañías con fines de lucro, sin fines de lucro e híbridas. Por ejemplo, una empresa con fines de lucro y con un impacto social positivo significativo puede ser considerada como tal porque produce y comercializa productos para grupos desfavorecidos o porque tiene un impacto ambiental positivo al introducir tecnologías más limpias que las existentes.

SECCIÓN SÓLO PARA QUIÉN APOYA a equipos empresariales y organizaciones con un impacto social significativo:

¿Cuántos equipos de negocios y organizaciones con un impacto social significativo incubaron/aceleraron en 2018? (teniendo en cuenta los equipos y organizaciones empresariales existentes a los que ha seguido prestando apoyo en 2018 y los nuevos participantes en 2018)	
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¿Utilizan métricas o criterios para evaluar el impacto social potencial de los equipos de negocio y las organizaciones que incuban?	Sì	No
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Los equipos y organizaciones empresariales con un impacto social significativo que usted incubó/aceleró en 2018, ¿en qué sectores operan/operan (indique el número de equipos y organizaciones empresariales para cada sector, algunos pueden pertenecer a más de un sector)?		
a	Salud y bienestar (incluido el deporte)	
b	Pobreza y exclusión social	
c	Desarrollo de la comunidad	
d	Cultura, artes y oficios	
e	Protección del medio ambiente y de los animales (incluidos la agricultura y la ganadería)	
f	Financiación sostenible y protección del consumidor	
g	Colocación de empleo, creación de empleo, igualdad de género	
h	Educación	
i	Turismo social y consumo responsable	
l	Paz y Justicia	
m	Servicios a empresas sociales y organizaciones sin fines de lucro	

¿Ofrecen servicios específicos para este tipo de equipos y organizaciones empresariales, tales como instrumentos financieros ad hoc?	Sì	No
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¿Qué dificultades encontró para apoyar a equipos empresariales y organizaciones con un impacto social significativo? (respuesta múltiple)		
a	Menores retornos financieros esperados	
b	Mayores dificultades para encontrar financiación	
c	Diferentes objetivos y lenguajes	
d	No hay dificultad	
e	Otro	

SECCIÓN SÓLO PARA QUIÉN NO APOYA a equipos empresariales y organizaciones con un impacto social significativo:

En 2018, ¿recibió solicitudes de incubación de equipos y organizaciones empresariales con un impacto social significativo?	Sì	No
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si respondiste que sí:

¿Por qué no apoyaron a equipos y organizaciones emprendedoras con un impacto social significativo? (respuesta múltiple)		
a	Menores retornos financieros esperados	
b	Mayores dificultades para encontrar financiación	
c	Diferentes objetivos y lenguajes	
d	Fuera de la misión de la incubadora	
e	Otro	

si respondes que no:

¿Apoyaría a los equipos y organizaciones empresariales con un impacto social significativo si presentaran su candidatura?	Sì	No
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si respondió no (respuesta múltiple):

¿Por qué no apoyar a equipos y organizaciones emprendedoras con un impacto social significativo? (respuesta múltiple)		
a	Menores retornos financieros esperados	
b	Mayores dificultades para encontrar financiación	
c	Diferentes objetivos y lenguajes	
d	Fuera de la misión de la incubadora	
e	Otro	

Datos financieros

¿Cómo se dividen los costos operativos de la incubadora en porcentajes? Asigne costes de personal en proporción a su compromiso a las siguientes actividades		
Componente de coste		%
a	Costes para la gestión de la estructura y costes relacionados con los servicios genéricos (por ejemplo: facturas, equipos, papelería).	
b	Servicios de apoyo empresarial y técnico (por ejemplo, jurídicos, administrativos, contables, de marketing, de propiedad intelectual y de transferencia de tecnología).	
c	Formación para equipos empresariales y organizaciones incubadas/aceleradas	
d	Otros servicios a las incubadoras	

¿Cuáles son los porcentajes de ingresos de la incubadora?		
Componente de coste		%
a	Alquiler	
b	Ingresos procedentes de la prestación de servicios a los viveros de empresas	
c	Ingresos procedentes de inversiones en empresas incubadas (por ejemplo, derivados de la posesión de capital - dividendos - o de la venta de capital - salida -).	
d	Otros ingresos (por ejemplo, contratos de consultoría)	
e	Subvenciones y convocatorias de propuestas nacionales e internacionales (incluida la cofinanciación)	
f	Donaciones	

Financiación y Comunidad

¿Cuánta financiación total recibió de las organizaciones que incubó/aceleró en 2018 (teniendo en cuenta tanto las inversiones de capital como las subvenciones, las licitaciones públicas, etc.)?		
¿Aceptó acciones de empresas incubadas en 2018?	Si	No
En caso afirmativo (respuesta múltiple)		
para inversiones de capital de riesgo?	Si	No
a cambio de servicios? (trabajo por la equidad)	Si	No
¿Ha organizado eventos/talleres/seminarios abiertos también a personas no incubadas?	Si	No
Número comprobado por acuerdos formales de cooperación con inversionistas		
Número comprobado mediante acuerdos formales de colaboración con entidades corporativas		

Número de comunicados de prensa anuales de la incubadora y de los equipos y organizaciones de empresas incubadas		
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Actividades

¿Ofrecen (directa o indirectamente) estos servicios a equipos y organizaciones empresariales incubados/acelerados?					
		No	Sólo a unos pocos	A muchos	A todos
a	Apoyo a la gestión (por ejemplo, elaboración de planes de negocio, formación de empresas, desarrollo de modelos de negocio, tutoría, apoyo en marketing y ventas, internacionalización).				
b	Espacios físicos (incluyendo servicios compartidos)				
c	Formación empresarial y gerencial				
d	Apoyo a la búsqueda de financiación (incluida la ayuda en el diálogo con los inversores)				
e	Servicios administrativos, legales y jurídicos				
f	Apoyo en la gestión de la propiedad intelectual				
g	Apoyo en el desarrollo de relaciones - creación de redes (por ejemplo, con centros de investigación, universidades, agencias gubernamentales, empresas y otras empresas incubadas).				
h	Apoyo al desarrollo tecnológico y al escultismo				
i	Servicios de evaluación del impacto social				
l	Formación y consultoría en Ética Empresarial y Responsabilidad Social Corporativa (RSC)				

Gracias. Una última cosa

Por favor, envíenos la lista de nombres y números de IVA de los equipos y organizaciones de negocios incubados/acelerados en 2018 (teniendo en cuenta cualquier empresa existente a la que haya seguido apoyando en 2018 y los nuevos participantes en 2018) a esta dirección de correo electrónico: es.incubatormonitor@polito.it

Gracias de nuevo!