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The impact of the entrepreneurial ecosystem (investors, regulators, incubators) on the fit of the Italian start-ups into the value chain (suppliers, partners, customers)

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Abstract

The analysis of a generic entrepreneurial ecosystem is a though challenge, since it includes different variables and players extremely correlated among them. The aim of this study is to focus strictly on the relationships happening between the start-ups and the other actors in the ecosystem. Since many researchers – mentioned in the literature review – already studied broadly and deeply these dynamics separately, this analysis wants to bring new concrete conclusions with a new perspective. In particular, it will look to how these relationships affect what at the end is the crucial parameter of a start-up survival: its fit into the value chain. Therefore, when assessing the features of each relationship with a category of actors, the research will be not limited to listening to qualitative thoughts by the entrepreneurs, but it will try to understand the real and quantitative impact on the start-ups revenue. In other words, this study will be not focused on the one-to-one relation that a start-up may create with the different actors in the ecosystem but will try to link them with the effect on the firm economic performance.

The preferred target audience of this study includes mainly two categories of actors. On one side, all the players in any entrepreneurial ecosystem that want to act to relieve some of the obstacles faced by the Italian start-uppers. On the other side, all the entrepreneurs that – surrounded by many challenges and obstacles – are looking for guidelines to establish successful relationships that are bringing real value to their new ventures.

This document is structured in two parts. The first one is the literature review on the topic and includes an introduction on a generic entrepreneurial ecosystem framework, followed by one section for each type of players in an ecosystem (namely regulators, investors, incubators and value chain players). In each of these sections, the research hypotheses will be formulated. The solidity of these hypotheses will be then assessed in the second part, where the research method will be explained, the results commented and finally the hypotheses validated or rejected.

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Keywords: *start-up, ecosystem, entrepreneurship, value chain, regulators, investors, incubator*

1. THE LITERATURE REVIEW

1.1 General features of an entrepreneurial ecosystem

Any entrepreneurial ecosystem is a complex environment to be studied, as it includes several actors with clearly different objectives, together with many kinds of relationships and dynamics that may happen among them. However, a relevant number of authors tried to build general framework that could be used to approach any analysis on this topic. For instance, it is worthwhile to mention the study by Clarysse that highlights the correlation between the knowledge ecosystems and the value networks (Clarysse, September 2014). In particular, the research tries to break the strong assumption that the creation of a knowledge hub (made of Universities and Research centres) automatically brings to the development of value networks, “through which the participating companies can realize a competitive advantage” (Clarysse, September 2014). In the case of the region of Flanders, that was the area chosen for the analysis, there was a centralized knowledge ecosystem with few main actors, but the business ecosystem was almost completely absent. The researchers attributed the cause to the fact that the value creation is linear along the value chain in knowledge centres, while this is not the case for the business ecosystems that have a network-like structure. Even if the study was limited to the region of Flanders, its conclusions are relevant also today and specifically for the Italian scenario under the scope of this Thesis: big relevant Universities poles does not imply a fertile and hospitable landscape for new ventures, even when a University-linked incubator is present. The gap is due to a different perspective on the value creation goals, with the discrepancy between the research-focused knowledge produced by the University and the business intent of new ventures. According to (Clarysse, September 2014), financial support from private actors is needed to bridge the gap, because they would be able to bring a new *modus operandi* in the old network (i.e. the knowledge ecosystem) (Clarysse, September 2014). With a different perspective, the new *modus operandi* can also be brought by foreign actors (both investors and entrepreneurs), given their different background. In this sense, Italian Government is trying to incentivize foreign entrepreneurs to come to Italy to establish new start-ups. The “Italia Start-up Visa” programme – one of the new tools implemented in 2014 – gave this specific visa to 200 foreign entrepreneurs, as of the end of the first semester in 2018 (MISE, 2018).

The creation of a framework “universally” valid to study entrepreneurial ecosystem was the main objective also of the study by Spigel and Harrison in 2018, where the authors started from the definition of the industrial clusters and of the regional innovation systems (RIS) to state that entrepreneurial ecosystems show peculiar characteristics in the middle of the two. The industrial clusters concept is backed by the Porter’s model of the 5 external forces within a region that shape the industry’s competitive advantage; this leads to a concentration of specialized and skilled workers in the Region, where the spill overs between different entities is the preferred channel and trigger for new ventures (Spigel B, 2018). On the other side, RIS can be summarized as Regions where the Innovation is built on anchor organizations and across firms in a structured System. Entrepreneurial ecosystems take characteristics from both the concepts, but then develop peculiar features, which regulators have to be aware of, when they want to encourage the creation of such an environment. In particular, Spigel and Harrison highlighted 3 crucial points about the entrepreneurial ecosystems (Spigel B, 2018):

1. It is not a matter of just the resources available in the Region, but also of the ability of the entrepreneurs to access these resources through their network, personality and so on. On top of that, being skilled is not enough, since the workforce must be both ready and aware of the entrepreneurial processes; this knowledge goes beyond the market and technical knowledge and it is got through an entrepreneurial culture developed in the ecosystem.
2. Entrepreneurial ecosystems are led by entrepreneurs, that are the crucial actors in the resources and knowledge flow. The State does not follow a top-down approach, instead it facilitates such a flow.
3. The entrepreneurial knowledge across industries is more important than knowledge about the specific industry as it happens in Porter clusters and RIS. As a consequence, information and experience sharing is more common since there is less competition among the actors.

Strictly related to the first point, the development of an entrepreneurial culture is relevant also when it comes to recycling the resources (people, knowledge, skills) within the ecosystem, even from failed ventures. This is possible only if a valid culture of failure is built and the lack of it brings the resources to flow out from the ecosystem rapidly, preventing the creation of a resilient ecosystem (Spigel B, 2018).

All the considerations above brought Spigel and Harrison to build the matrix displayed below, that can be considered as a reference when modelling an entrepreneurial ecosystem analysis.

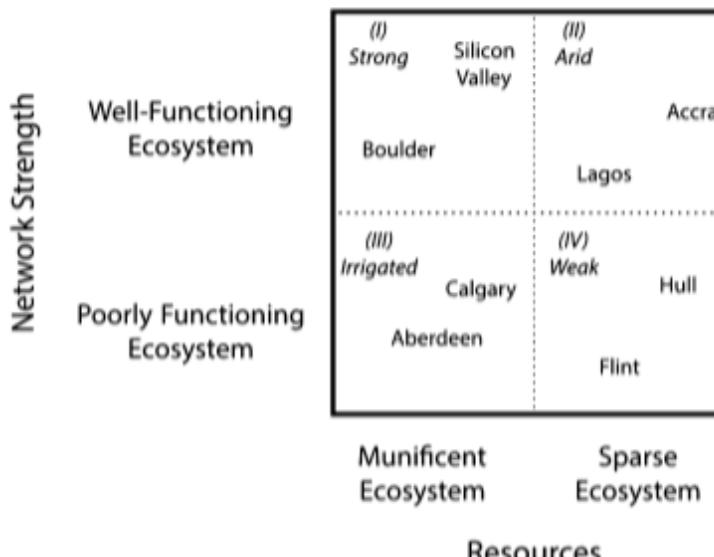


Figure 1.1. Schematic representation of ecosystem types (Spigel B, 2018).

“The sparseness or munificence of an ecosystem refers to the aggregate amount of resources available within it, while the functionality of an ecosystem is determined by the ability of entrepreneurs to access the resources within an ecosystem. Well-functioning ecosystems refer to ecosystems with dense networks between entrepreneurs, investors, advisors, and other key actors” (Spigel B, 2018). The reader is invited to keep in mind both these two dimensions when going through the analysis on this Thesis; in fact, the research phase aims to understand which areas in Italy could be defined as munificent and which ones as sparse ecosystems. Moreover, within each of the two sides, it is reasonable to expect that some Italian entrepreneurs live different experiences, despite of acting in the same ecosystem. This is symptomatic of the entrepreneur’s ability explained above to access the resource and – if realized – would mean that the Italian start-up ecosystem is still not ready to be defined well-functioning, since the involved entrepreneurs suffer from accessing the resources.

1.2 The role of regulators and their impact on the start-ups fit into the value chain

After the generic introduction of the previous section, the next three chapter analyse the 3 main type of actors in an entrepreneurial ecosystem, namely and respectively the regulators, the investors and the incubators.

Regarding the first, the arguments provided in the introduction have two crucial consequences for the regulators' action:

1. Investment on regional knowledge hubs does not bridge automatically the gap with the business ecosystem or lead to its creation; in other words, the funds to knowledge centre actors the technology transfer offices (TTO's) and spinoffs does not change their academical mindset into the business one (Clarysse, September 2014).
2. According to (Spigel, 2018), “[T]he proper role of the state is to cultivate the entrepreneurial community and culture that will eventually help produce and reproduce the required entrepreneurial resources rather than trying to create them from scratch, [...] while other aspects can be cultivated through enabling entrepreneurial actors to build a strong community” (Spigel B, 2018). In fact, thick networks with right culture are essential to make the other tools (incubators, VC's and so on) really effective.

The Italian government recently tried to take actions in this direction. An important milestone in this path is represented by the Decree-Law 179/2012, better known as “Start-up Act”, that provides with new tools and directives affecting all the phases of the start-ups life (foundation, growth, exit) and valid for all the innovative ventures in their 5 years.

Foundation phase:

- Italia Start-up Visa, an online process to get self-employment visas to Italy for non-EU citizens that want to move to Italy and establish there a new venture.
- Italia Start-up Hub, similarly to the Start-up Visa, but for non-EU citizens already living in Italy and that want to prolong their stay to found a start-up in Italy
- Bureaucracy for the start-up registration available entirely online. This makes the procedure completely free and simplified.
- Exemption from payment of annual fees to the Chamber of Commerce when depositing an act.
- Permission to create shares with peculiar rights, making the limited responsibility start-ups more similar to the listed ventures.
- Exemption to the regulation regarding non-operational companies and businesses registering systematic losses.

- Regulation on the equity crowdfunding

Growth:

- Salaries can be paid in different and flexible ways (f.i. equity) with total flexibility
- Extension of terms for covering losses, with a one-year extension to reduce capital
- A tax credit for hiring highly qualified personnel
- Tax incentives to corporate and private investors who invest in start-ups
- Fast-track simplified and free access for innovative start-ups to SME Guarantee Fund
- R&D Tax credit
- Smart&Smart Italia program, to fund spending plans with zero-interest mortgages
- Access to the Invitalia Ventures fund

Exit

- Fail-fast, the exemption from the normal bankruptcy processes

The tools briefly explained above are the attempt from the Italian government to support the creation of the entrepreneurial culture explained in the introduction; the intent is not to create the needed resources from scratch and somehow “artificially”, but to give the (to-come and existing) entrepreneurs the facilitations to freely act to attract and then exploit the resources in the Region. This value is underlined also by authors like Lukeš, Longo and Zouhar (2018) that state “the newly established Italian Start-up Act policy may play a positive role in supporting innovative start-ups, because it does not try “to pick the winners” but provides support for all innovative start-ups that meet its criteria” (Martin Lukeš, 2018).

It is clear that this directive tries to increase also the survival rate of the Italian start-ups, but it is also true that there are different variables affecting the success of the start-ups. Therefore, as stated by Mas-Verdú, Ribeiro-Soriano and Roig-Tierno, “entrepreneurship policies to foster the use of incubators should not be generic, [...] but tailored on the needs of their target customers (namely the start-ups)” (Francisco Mas-Verdú, April 2015). Given this last consideration, the best way to really assess the effectiveness of the Start-up Act is listening to the entrepreneurs voices. This is the objective reached by the first survey on innovative start-ups in Italy, conducted by the ISTAT and the Economic Development Ministry (MISE) in 2016. Among the different aspects that this initiative wanted to assess, two in particular are

relevant for this discussion, the entrepreneurs awareness and actual usage on one side and the impact on their business on the other side.

Figure 1.2. Degree of knowledge of the benefit measure (percentage value) (MISE, 2016)

From the table, the reader can extrapolate valuable information in 3 directions: awareness of the directive benefits (first 4 columns in the table above), knowledge on how to benefit from them (first 3 columns) and actual usage or desire to use them (first 2 columns). To facilitate the readiness of the outcome, the table below summarizes each of the three different

KNOWLEDGE, INTEREST AND USE OF THE FOLLOWING BENEFIT MEASURES	I know and have used them	I know and intend to use them	I know them, but am not interested in them	I know them but I do not know how to take advantage of them/I need to learn more	I don't know them
Reduction of startup and incorporation costs	62.9	10.7	6.4	8.1	12
Flexible corporate management	25	17.8	20.6	12	24.6
Incentives for investors	18.6	36.2	12.3	15.7	17.2
Preferential access to the Guarantee Fund for SMEs	18.4	33.4	16	18.4	13.9
Simplification of VAT compensation	14.2	31.2	11	15.3	28.3
R&D Tax credit	12.2	38	8.8	18.5	22.5
Benefits in loss compensation Extension of terms for covering losses	11.6	24.1	24.5	15.1	24.7
Smart&Start Italia	10.8	23.7	25.2	16.8	23.4
Flexibility in the use of fixed-term contracts	9.8	36	20.3	15.7	18.2
Smart&Start	7.4	16.4	31.5	13.7	31
Cipaq 2012-2014	7.1	25.8	13.3	14.3	39.4
Inapplicability of the regulations on dummy companies	6.8	11.6	25.4	9.9	46.4
ITA services for internationalisation	5.9	23.7	21.2	19.7	29.5
Stock options and work for equity	4.4	28.3	25.2	18.9	23.3
Patent Box	3.5	28.9	15.4	19.9	32.2
Dynamic wages	3.5	30	16.9	16.8	32.9
Equity crowdfunding	1.7	27	36.5	18.2	16.7
Italia Startup Visa	1	8.7	27.8	13.1	49.5
Italia Startup Hub	0.5	8.5	27.3	13.2	50.6

cumulative probabilities for each Start-up Act benefit.

Benefit	Know the existence	Know how to benefit	Use or desire to use
Reduction of start-up and incorporation costs	88.1	80	73.6
Flexible corporate management	75.4	63.4	42.8
Incentives for investors	82.8	67.1	54.8
Access to GF for SMEs	86.2	67.8	51.8
Simplification of VAT	71.7	56.4	45.4
R&D Tax credit	77.5	59	50.2
Extension for covering losses	75.3	60.2	35.7
Smart&Smart Italia	76.5	59.7	34.5
Fixed-term contracts flexibility	81.8	66.1	45.8
Smart&Smart	69	55.3	23.8
Cipaq	60.5	46.2	32.9
Dummy companies inapplicability	53.7	43.8	18.4
Internationalisation services	70.5	50.8	29.6
Work for equity	76.8	57.9	32.7
Patent box	67.7	47.8	32.4
Dynamic wages	67.2	50.4	33.5
Equity crowdfunding	83.4	65.2	28.7
Italia Start-up Visa	50.6	37.5	9.7
Italia Start-up Hub	49.5	36.3	9

Table 1.1. Cumulative probabilities of knowledge of the benefits, how to get them and interest in using them. Derived from (MISE, 2016).

Being the survey dated 4 years after the issuing of the directive, the good signal is the fact that the clear majority of the benefits is known by more than two thirds of the entrepreneurs. Such a positive outcome somehow holds when it comes to the knowledge on how to benefit from them, since on average 80% of the people knowing about the new tools then know how to benefit from them. An opposite feeling is given by the interest by the entrepreneurs in using them; in fact, apart from the reduction of start-up and incorporation costs, almost all the instruments are used (or desired to be used) by less than 50% of the start-uppers. In other words, among the people that are aware on how to benefit from the new tools, 25% up to 50% is then not interested on use them. This conclusion could be read in 2 ways. On one side,

the measures from the directive are relevant just for the minority of the start-ups and – in other words – do not address the crucial obstacles they face. On the other side, regarding the communication, this is a signal that either the real potential directive impact on the business is not perceived or that the procedure to access it is still too hampered. To go deeper is this consideration, the survey by the MISE and ISTAT went further, asking to the entrepreneurs to rate the impact of each benefit they used. The results are summarized in the table below.

Figure 1.3. Impact of the Start-up Act measures (MISE, 2016).

Considering that the rates were given in a scale from 0 to 5, the overall outcome sounds positive, since all the grades are above the average (2.5). Interestingly, the two most used measures (reduction of start-up costs and Chamber of Commerce costs exemption) are among

Impact of the measures used	average rating	no.
Preferential access to the Guarantee Fund for SMEs	4.33	310
R&D Tax credit	4.02	213
Cipaq 2012-2014	3.80	117
Incentives for investors	3.72	311
Stock options and work for equity	3.59	80
Extension of terms for covering losses	3.49	224
Simplification of the VAT compensation	3.45	261
Flexibility in the use of fixed-term contracts	3.39	170
Smart&Start Italia	3.23	124
Patent Box	3.14	58
Dynamic wages	3.13	56
Inapplicability of the discipline for dummy companies	3.07	126
Flexible corporate management	3.06	501
Waiver of costs in the Chamber of Commerce	2.88	1,433
Reduction of start-up costs	2.84	1,291
Smart&Start	2.84	183
ITA services for internationalisation	2.72	97

the ones rated worst. This is probably due to the fact that the impact of these two measures

are limited in time (start-up costs) or in relative amount of money saved (Chamber of Commerce costs). Coming back to the intent of the last two tables, that were to understand if the problem lies in the relevance of the measures, in the communication of them or in the procedure to get them, the picture is still not fully clear, especially because the start-ups that used the new measures are counted among all the surveyed ventures, and not only among the eligible for each tool. Put differently, it is logic that some benefits are used less than others, since the target group size could be different. Without having the share of users over the eligible ones, it is hard to investigate deeper. However, we should conclude that who at the end leveraged the Start-up Act content has a positive impact on his/her business; this represents the first research hypothesis to be tested.

H1a: when the effectiveness of the relationship with the regulators is perceived (qualitatively) good, the fit into the value chain is also realized (quantitatively) better.

Limiting the analysis to an aggregate level, however, would be simplistic, since it is logic to assume that the relationship with regulators may vary according to the start-up Region and its singularities and background. Leveraging further the survey from the MISE, we could find worthwhile insights in this direction. “The founders with economic or managerial training have an overall better knowledge of the measures, which is then reflected in a more widespread use of them. The least informed instead appear to be university graduates in technical-scientific subjects.” (MISE, 2016). It is interesting to notice that also the source of the awareness changes in regard to the characteristics of the business; in this case, larger enterprises leverage employer associations and consultancy companies, while smaller firms indicate as main actor the enterprises incubators, seminars and online media (MISE, 2016). As said, even the Region of origin of the start-up is likely to influence to relationship with the regulations. The “Relazione Annuale al Parlamento sullo stato d’attuazione e l’impatto delle policy a sostegno di start-up e PMI innovative” (*Annual report to the Parliament about the policy implementation and impact supporting the start-ups and innovative SME’s*), signed by the at-that-time Italian Minister for the Economic Development Carlo Calenda in 2017 (Calenda, 2017) could help on this aspect. In fact, this report includes the geographical

distribution of the innovative start-ups registered with the new online procedure, that could be used as a proxy of the trust, awareness and usage of the directive by Region.

Figure 1.4. Geographical distribution of the innovative start-ups registered with the new online procedure (Calenda, 2017).

The scenario is clearly dominated by Lombardia, Veneto and Lazio that together cover almost

REGION	N. STARTUP	%
Lombardia	151	22,4%
Veneto	100	14,9%
Lazio	75	11,1%
Emilia-Romagna	48	7,1%
Sicilia	46	6,8%
Campania	34	5,1%
Puglia	34	5,1%
Marche	30	4,5%
Toscana	25	3,7%
Trentino-Alto Adige	19	2,8%
Calabria	18	2,7%
Friuli-Venezia Giulia	18	2,7%
Piemonte	17	2,5%
Liguria	16	2,4%
Sardegna	13	1,9%
Abruzzo	11	1,6%
Basilicata	7	1,0%
Umbria	7	1,0%
Molise	4	0,6%
TOTAL	673	

the 50% of the online registration. Among the others, the share is almost equally split among Regions from the North, the Centre and the South, with no significant differences among them. This scenario is obviously also derived by the fact that overall 24.6% of the Italian Start-ups are located in Lombardia and 10.7% in Lazio (Unioncamere, 2018). Together with this, Lombardia is also the Italian Region with the highest number of incubators (Grasso G., 2015); this correlation will be approached in later chapters but it is reasonable to expect that incubators can cover a relevant role in the awareness and in the use of the most recent tools available for start-ups.

Given some evidences on how the background of the founders and of the ventures affect the relationship with the regulators, it is logic to conclude that the experience with them is perceived differently among the Italian start-ups.

H1b: it is not possible to find a driver that can ensure that similar start-ups (according to that driver) experience the same satisfaction level in the relationship with the regulators.

1.3 The role of investors and their impact on the start-ups fit into the value chain

Before elaborating deeply the true relationship between start-ups and investors, it is worthwhile to have a quantitative overview of the funding dynamics happening in the entrepreneurial world. The Start-up Survey conducted by MISE and ISTAT comes again in support in this direction. First of all, the reader can compare below the sources of the funding for new ventures both at their incorporation moment and at the time of the survey.

Proportion %	Own funds	Donations from family, friends and fools	National public financing	Regional/local public financing	Equity investments (a)	Bank loan
0	5.7	95.7	97	92.3	91.8	91.5
1-25	7.5	1.4	0.4	2.3	1.9	2
26-50	7.4	1.5	1	1.9	1.3	2.4
51-75	2.8	0.1	1.1	1.4	0.8	1.6
76-99	3.4	0.5	0.3	1.9	1.3	1.5
100	73.2	0.8	0.1	0.2	2.9	1
TOTAL	100	100	100	100	100	100

(a) Venture capital, business angels, enterprise, other.

Figure 1.5. Financial sources at the time of the start-up's incorporation – Year 2015 (Percentage values). (MISE, 2016)

Percentage of the capital %	Own funds	Donations from family, friends and fools	National public financing	Regional/local public financing	Equity investments (a)	Bank loan
0	9.8	96.9	94.4	91.3	88.8	74.9
1-25	11.1	1.5	1.7	3.9	1.9	6
26-50	10.7	0.7	2.1	2.9	2	7.2
51-75	5.4	0.1	1.2	0.9	1.4	4.4
76-99	5.5	0.4	0.4	0.5	2.3	4.7
100	57.5	0.4	0.2	0.5	3.6	2.8
TOTAL	100	100	100	100	100	100

(a) Venture capital, business angels, enterprise, other.

Figure 1.6. Financial sources at the time of the filling in of the questionnaire – Year 2015 (Percentage values). (MISE, 2016)

The two tables above confirm the expectation the reader might have. At the incorporation, the primary source of funds is the own money of the founders (73.2% of the surveyed start-ups used only this source to launch the new venture). Bank loans are usually avoided or not accessible at the time of incorporation, but the usage of them increases from 8.5% at the start-up launch to 25.1% at a generic moment. All the others funding sources are by far less used. Moreover, “after their incorporation, 68.4% of the enterprises interviewed have not sought new funding from venture capital or business angels nor have they launched equity crowdfunding campaigns” (MISE, 2016), representing a lack of need or ability to reach external financial support. One confirmation of this last aspect is given by the Annual Report on the status and implementation of the Italian Government policy in support to small and medium enterprises (Calenda, 2017). In such a report, the decline in usage of equity crowdfunding campaigns is highlighted, both in terms of target amount and offered shareholding.

Different factors influence the numbers emerging from this scenario; among them, the size (in terms of revenue) and the geographical area are the most relevant ones.

	Venture size	Geographical area
Own resources	Bigger the firm, lower the share covered by own resources	Prevailing in North West

Public financing	Bigger the firm, lower the share covered by public finances	More numerous in the South
Equity	Bigger the firm, higher the share covered by VC's	Higher in North West
Bank loans	Significant for mid-size firms (less relevant for the others).	Mostly in North East

Table 1.2. Highlights on the correlation of the funding type with the venture size and the geographical area.

It comes as a consequence of this that pure equity financing are preferred to the pure debt ones, as highlighted in another section of the survey (MISE, 2016).

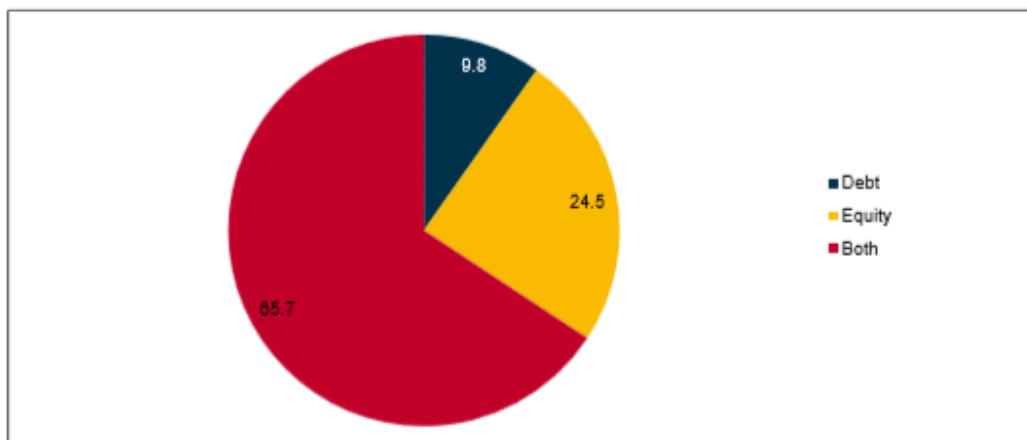


Figure 1.7. Ideal financing forms for the start-ups – Year 2015. (MISE, 2016)

In this direction, Venture Capital funds cover a relevant role. According to a research conducted by (Bollazzi F., 2018), in 2017 a VC operator invested on average 0.5€ million in seed investments and 3.4€ million in growth financing. Also in this case, Lombardia is leading the ranking as the top investments receiver, followed by Lazio.

If we continue to investigate on the influence of the geographical area on the relationship with the investors, the Annual Report on the status and the impact of the Italian Government policy in support to the new ventures (Calenda, 2017) provides with a breakdown by region of the investments realized by the Government.

Area	Start-ups	Investments	Investments amount	% of investments
North-West	270	861	20 M€	50.5%
North-East	160	664	9.6 M€	24.4%
Centre	123	344	6.1 M€	15.5%
South	113	241	3.8 M€	9.6%
Total	666	2110	39.5 M€	100%

Table 1.3. Government investments breakdown by Region (Calenda, 2017)

The picture emerging from these figures is clear. Overall, Northern Italy got 75% of the investments overall, with the North West representing roughly the two thirds of them.

H2a: the relationship with investors (both public and private) is more effective in the North than in the South

Regarding the start-ups-investors relationship, in most of the cases, the amount of money collected is considered sufficient or at least partial (78.3% overall). In particular, the dissatisfaction is more present in Southern and Central Italy and with annual turnover lower than €100,000 (MISE, 2016).

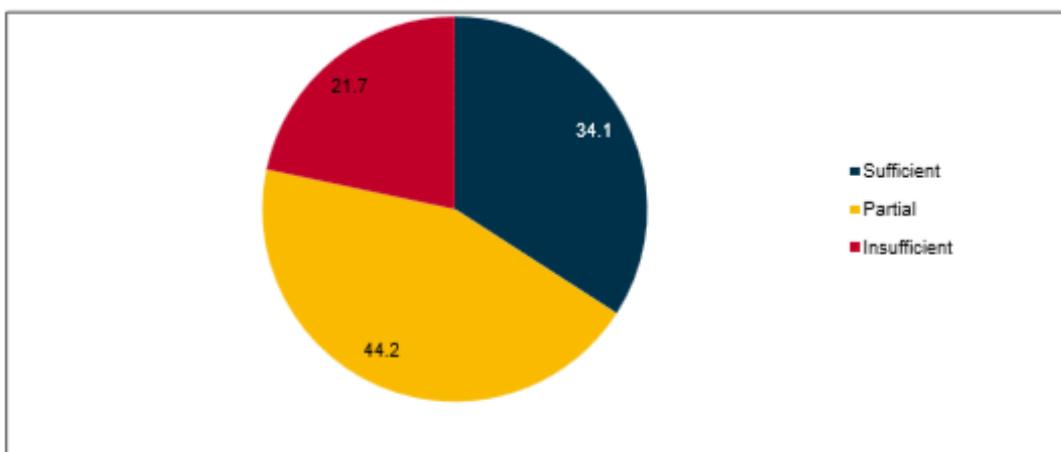


Figure 1.8. Coverage of start-ups' financial needs – Year 2015. (MISE, 2016)

Therefore, what are the reasons why 65.9% of the ventures are not able to cover their need of funding to go from an “insufficient” or “partial” coverage to a “sufficient” one? The reasons for many start-ups to be not able to access the investment markets are many and well known. Some examples are a weak business model, an incomplete team, a missing product-market fit and so on. These considerations are outside the scope of this specific research. What

instead is important to take in consideration is the motivation for rejecting an investment offer on one side and the justifications for failing in seeking external funding on the other side. Starting from the first end, the phenomenon is more common than expected: from the incorporation of the enterprise, 12% of the respondent enterprises, despite having received at least one investment offer from external subjects, declined them (MISE, 2016). The main two reasons for this choice is a venture evaluation considered too low by the founders (24.8% of the cases) and too onerous clauses in the contract (22.7%). We can rephrase such a situation with a sense of inferiority perceived by entrepreneurs when negotiating with investors. This could be based on reasonable and objective reasons or not, according to the case.

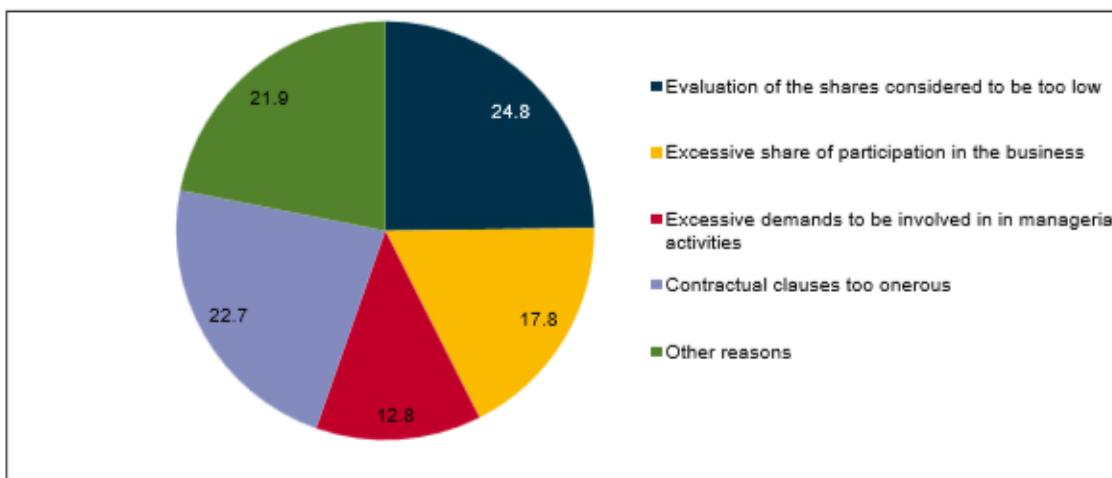


Figure 1.9. Motivations for rejection of the investment offer received – Year 2015.
(MISE, 2016)

On the other side, a start-up could fail or not be interested in seeking new financing. The first reason is a further proof of the arguments mentioned above: the own financial sources are sufficient (43.9% of the cases). Among the other reasons, there are the lack of trust, the risk of too limited decision-making autonomy and the industry specifics.

Given the considerations above regarding the positive impact given by the geographical area to the ventures in the North of Italy, it is interesting to notice that the feeling of lack of trust is at its lowest point in the North West (9.9% only).

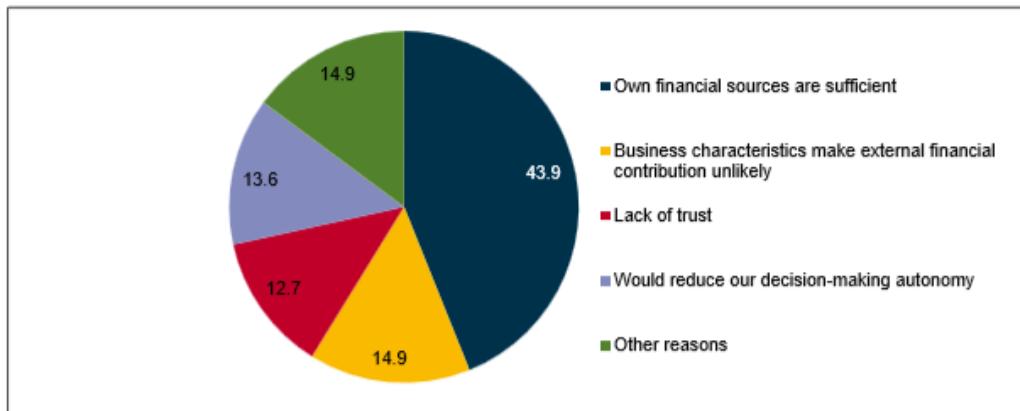


Figure 1.10. Motivations of the start-up for failure to seek new financing – Year 2015
(MISE, 2016)

Collecting all the points mentioned in this chapter, the vast majority of start-ups leverage the own funds of the founders and behind this choice these is not only the obvious reason of being small or self-sufficient, but a sort of negative perception of the investors role. Furthermore, the research previously mentioned by (Clarysse, September 2014) proved – even if in a limited geographical area – that the most locally embedded investors have a negative impact on the innovation output since they aim to exploit the technologies created by new ventures instead of developing them further. They do not bring necessarily an improvement in the average survival rate, especially when they are public (Clarysse, September 2014). So, we can logically make a further research hypothesis in regard to the relationship of start-ups with investors.

H2b: The start-ups-investors relationship is usually perceived (qualitatively) bad. However, even when its effectiveness is perceived (qualitatively) good, this does not necessarily bring to a (quantitatively) better fit into the value chain.

It is probably the situation just described that led the Italian Government to include massive financial support to small ventures in the Budget Act 2019. Here below the main points are listed:

- Possible sale of shares of the Italian Fund Invitalia, to give the possibility to new capital to access the Italian fund. The latter would become then a fund of funds.

- A portion of the income or of the dividends from the State-owned companies will be directed to Venture Capital funds.
- The State can buy shares of one or more VC funds (30 M€ in 3 years)
- The possibility for personal savings plan of investing in assets other than the risk neutral ones.
- Definition of the roles of the Business Angels and the Venture Capital funds.
- Tax discounts for who invests in start-ups.
- Mention (for the first time) of the words “Cloud computing” and “Blockchain”, with financial support on these fields (further 75 million euros for the Cloud computing and 45 million euros in 3 years for the Blockchain industry).

The effect of these decision will be clear and relevant in the medium time horizon, but it could help immediately in increasing the entrepreneurs' perception of the effectiveness and easiness of their relationship with the investors (both private and public).

1.4 The role of incubators and their impact on the start-ups fit into the value chain

The impact and effectiveness of incubators is a widely investigated topic. The situation that emerges from the literature is mainly negative, with the incubators having a negligible (or in some cases even absent) influence on the start-ups life. The latter can be seen as the sum of different variables like the innovative output, the survival rate, the revenues, the job creation and so further. This chapter aims to leverage the existing literature to assess the correlation between being incubated and some of these variables taken singularly.

(Clarysse, September 2014) got relevant conclusion in regard to the first two aspects mentioned above. In particular, the study affirms that working with top actors in the knowledge ecosystem is positive for the innovative output (measured using the number of patents as a proxy), but that they have no influence on the start-ups survival rate. Even more interestingly, the collaboration with average technology partners has negative impact on innovation output and even worse than having no partners at all (Clarysse, September 2014).

Then, regarding the sales revenues and the job creation, the research by (Martin Lukeš, 2018) states that “when the interaction of incubation with start-up age was included, support was

found for H3 [The effect of incubation on sales revenues of innovative start-ups varies with start-up age; it changes from a negative effect in the short term to a positive effect in the long term], but not for H4 [The effect of incubation on job creation in innovative start-ups varies with start-up age; it changes from a negative effect in the short term to a positive effect in the long term]. The results show that despite a slow start in the first two years after their foundation, innovative start-ups located in a business incubator subsequently increase their sales revenue growth more rapidly than non-incubated innovative start-ups and thus have a good chance of outperforming them (Martin Lukeš, 2018). The logic implication is to consider the exit policy applied by incubators as the reason why the start-ups performance during or just after their incubation period declines and is in general not sufficient. (Martin Lukeš, 2018) and other researchers suggested with emphasis that the retention inside the incubator should be built on performance-based milestones, so that the incubated ventures are incentivized to get success despite the sheltered environment. The reader could argue that for University incubators that host academic spin-offs, this behaviour could discourage the incorporation of such a type of ventures by researchers and entrepreneurs, but indeed this new and strong policy would make them able to overcome the business obstacles that make the research-based University spin-offs often fail. This new approach would also depart the incubators from the duty of “picking the right winners” in advance and provide them with a protected environment. In fact, with milestones based on the start-ups success the selection will be applied by the market itself directly (Martin Lukeš, 2018). As of today, “82.5% of the incubators selects the start-ups to be hosted case by case, evaluating time by time the proposed business ideas” (Auricchio M., 2014).

Obviously, the incubation period might be experienced and judged in many ways and consequently, it is reasonable to expect that some hosted ventures will complete such a period with a negative consideration of the incubator support in their start-up success. What it could be surprising is the percentage of this last group of entrepreneurs. According to (Auricchio M., 2014), 59% of the start-uppers judge the role of the incubators as “important, but not crucial” and only 23% of them declared that the incubators was essential in the journey of their start-ups and that they would not have had success without its contribution.

Finally, (Francisco Mas-Verdú, April 2015) used a more quantitative approach in assessing the correlation between the new ventures survival rate and a set of relevant variables, among

which the fact of being incubated or not. The main conclusion is that none of these variables (incubator tenancy, size, technology-based or not, number of employees, sector) on its own assures survival. Therefore, the get a sufficient condition to “guarantee” the survival of the start-up, appropriate pairs of variables must be considered. Among the effective combinations, the study mentions the “large size plus being incubated” and “being incubated plus manufacturing sector plus non-tech business” (Francisco Mas-Verdú, April 2015).

H3a: Regardless the relationship with incubators being perceived (qualitatively) well or not, the fit into the value chain is (quantitatively) realized in a more valuable way only by mature start-ups (and not necessarily all of them).

It is interesting then to consider also the link between the incubation tenancy with the relationships created with the other actors in the ecosystem. In other words, does the fact of being incubated improve the relationships with the other players in the ecosystem, mainly regulators and investors?

Leveraging again the survey conducted by MISE and ISTAT, “the majority (53.8%) of those surveyed that were hosted by a certified start-up incubator in the past have sought new funding from venture capital, business angels or through equity crowdfunding campaigns” (MISE, 2016). Moreover, “compared to non-incubated enterprises, they [the incubated firms] more frequently claim to have benefited from the incentives” of the Start-up Act (MISE, 2016). Therefore, it is not a coincidence that in Lombardia, that is the region with the highest number of incubators, with one quarter of the Italian incubators present there (Politecnico of Turin, 2018), the overall amount of investments coming from any type of investors is higher than all the other Regions.

With a broader perspective, generally the incubators put a lot of effort in creating a solid community around their hosted ventures. This is proved by a study conducted by the Politecnico of Turin, that highlighted (among many other aspects) the percentage of incubators that significantly act to create a community. The scenario emerging from the graph below is extremely positive.

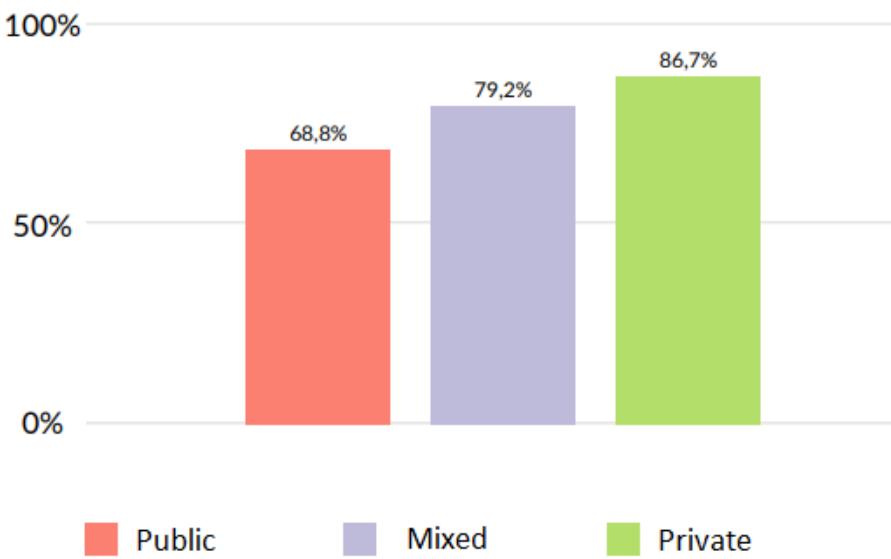


Figure 1.11. Percentage of incubators (by type) that put efforts to create a community in 2016 (Colombelli A., 2017)

H3b: The incubated ventures perceive qualitatively a better relationship with investors and regulators than the non-incubated enterprises.

If both these hypotheses will hold, this would mean that the incubators are generally able to ease the start-ups path in creating a good network inside the ecosystem, but that at the same time this does not mean necessarily that those ventures will leverage such a network to experience a positive fit into the value chain.

1.5 The start-ups relation with the value chain actors (suppliers, partners and customers)

So far in this literature review, the core of the analysis has been how different actors in the ecosystem affect the start-ups fit into the value chain, but the specific value chain actors *per se* – namely suppliers, partner and customers – have not been considered yet. This chapter approaches this aspect of the discussion.

Collaborations with suppliers, partners and customers can be realized in different ways that can be grouped basically in 2 categories, that are technological agreements and production-commercial agreements.

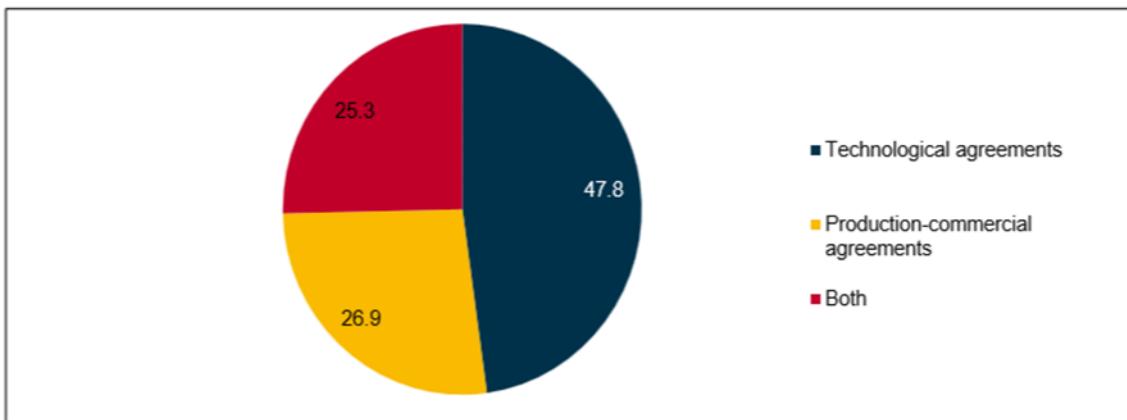


Figure 1.12. Type of formal agreements with external subjects – Year 2015. (MISE, 2016)

(MISE, 2016) proved how “the innovative start-ups that have an ongoing formal agreement of cooperation with universities or enterprises are set apart from the others” (MISE, 2016). In particular, they are characterised primarily by product innovation (49.8%), spend over 40% of their turnover in R&D (50.3%) and have at least 5 shareholders (33.3%).

In particular, (Arnaud de la Tour, 2017) – backed by BCG and Hello Tomorrow – published a study on the relationship between deep tech start-ups and large corporates. In few words, the deep tech start-ups are “built around unique, protected or hard-to-reproduce technological or scientific advances” (Arnaud de la Tour, 2017). The three biggest challenges that these ventures face are lengthy time-to-market, high capital intensity, technology risk and complexity. To address the challenges, “deep-tech start-ups need go beyond funding (which 80% of the start-ups surveyed ranked among the top three challenges they faced) to such issues as market access (61%), technical expertise (39%), and business expertise (26%)” (Arnaud de la Tour, 2017).

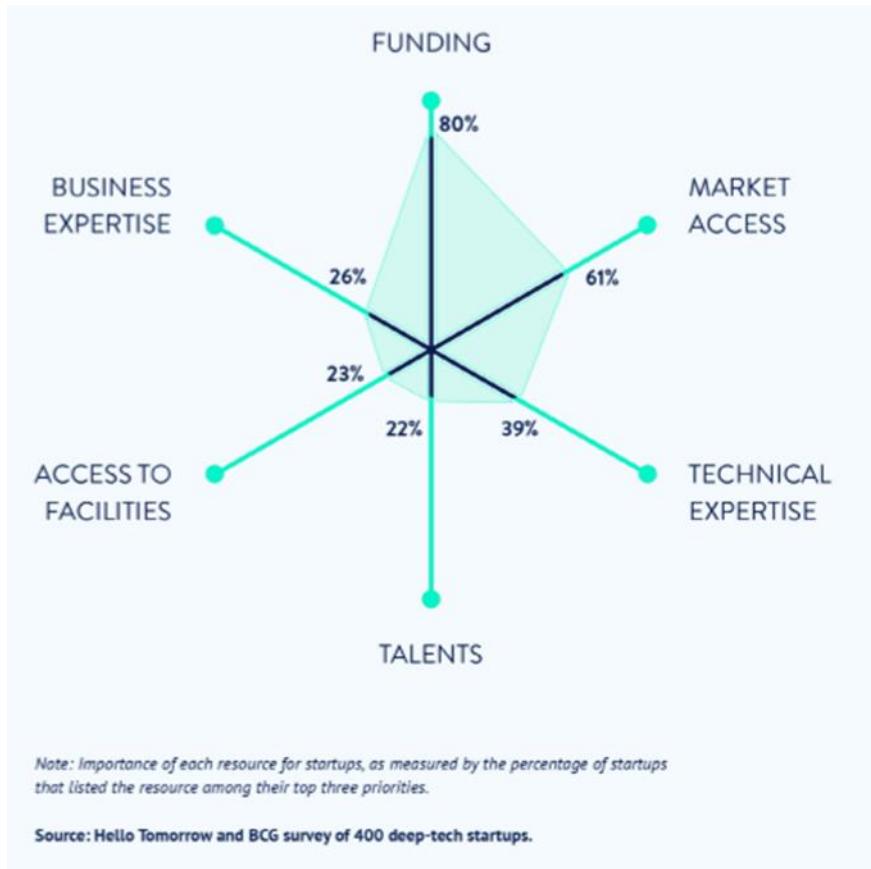


Figure 1.13. Main issues faced by start-ups. (Arnaud de la Tour, 2017)

This list of challenges explains why the collaboration with large corporates are so important for deep tech start-ups. In fact, big companies can provide with technical, commercial and industrial vision that the other actors previously analysed are not able to offer. In simple words, this kind of collaborations “at the crossroads of fundamental research and industrial application” (Arnaud de la Tour, 2017). Therefore, it is not a coincidence that large corporates and partners in the value chain are the actors that are able to cover the majority of the challenges just mentioned above. The graph below shows the comparison between their potential and the support from the other actors when dealing with such a set of criticalities.

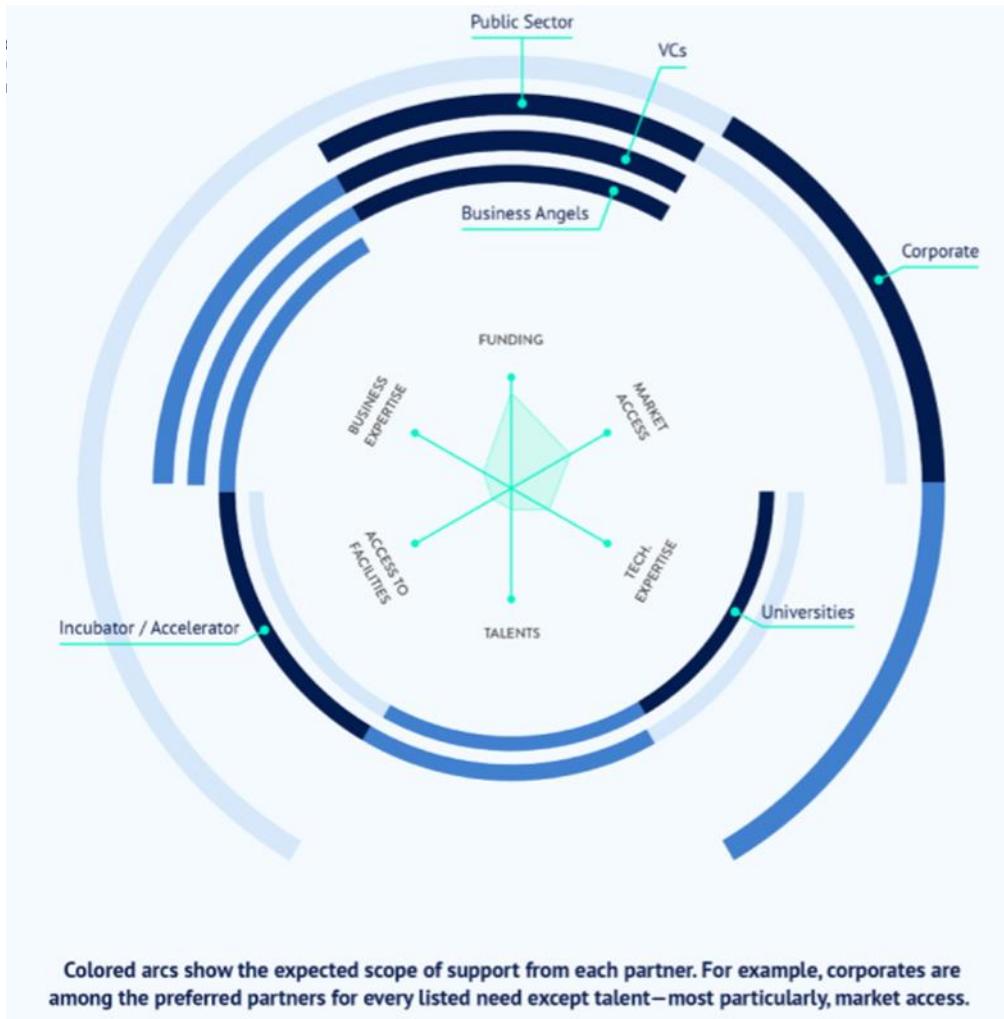


Figure 1.14. Correspondence between actors and their ability to cover start-ups needs.
(Arnaud de la Tour, 2017)

This reasoning explains why 97% of deep tech start-ups are interested in collaborating with corporate partners. However, just signing a formal collaboration agreement could be not sufficient. First of all, the cooperation must differ from the basic partnership used for instance to develop digital platforms and apps, since they must “establish mutually rewarding relationships” (Arnaud de la Tour, 2017). Second, start-uppers encounter key obstacles in creating such a crucial type of relation. The report by BCG and Hello Tomorrow found out what the 3 biggest ones among these obstacles.

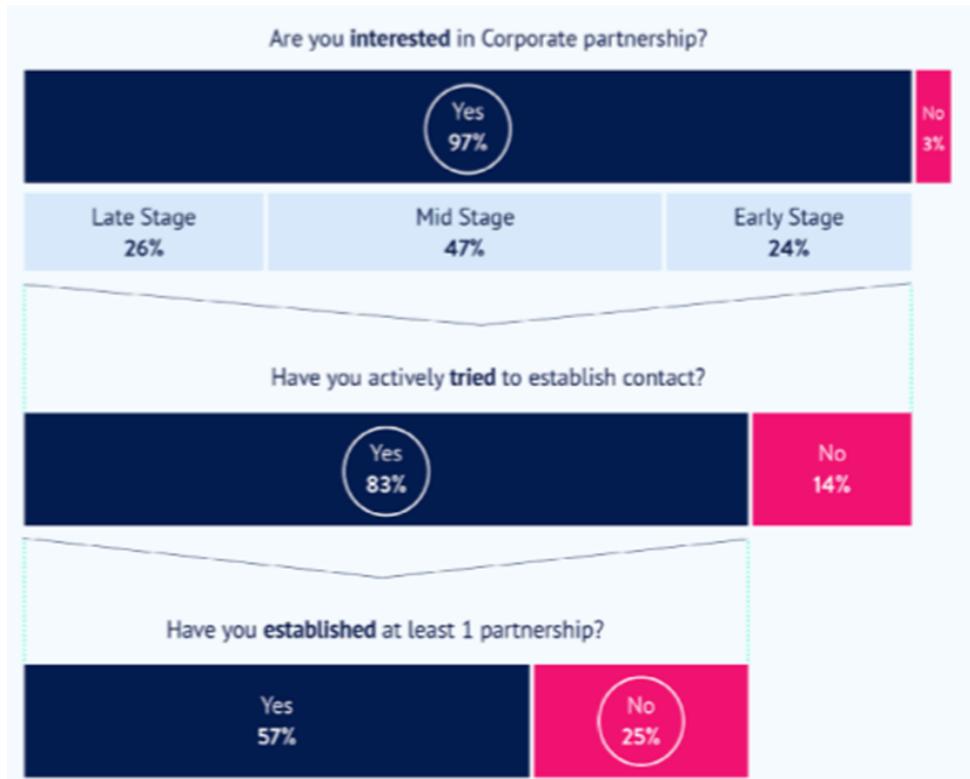


Figure 1.15 Breakdown of the start-ups interest and success in partnering with corporates. (Arnaud de la Tour, 2017)



Figure 1.16 Key obstacles when establishing a partnership. (Arnaud de la Tour, 2017)

Despite these obstacles, in Italy the number of CVC investors is increasing: according to (Assolombarda, 2018), from 2016 to 2018 the number of CVC investors moved from 5149 to 7653 and the ones with direct participation increased from 2347 to 3708.

The majority of the considerations explained in this chapter are proved for deep tech start-ups but can be considered as valid hypotheses for all the types of innovative start-ups.

H4a: On average, start-ups that perceive qualitatively a better relationship with the actors in the value chain get better quantitative performances than the others

H4b: Start-ups partnering with other firms (regardless the size) experience a better fit (as quantitative performance) into the value chain.

2. THE RESEARCH

2.1 Characteristics of the research phase

The research phase is built around a series of interviews to 68 start-uppers that reached a certain level of success in their ecosystems. The crucial aim of the process was to go beyond the merely quantitative approach, that would have cut many nuances of the relationships that the start-ups can have with the actors in the context where they operate. Therefore, together with a numerical matrix that will be helpful to summarize the interview results, the research will also leverage qualitative contributions from the interviews to highlight the most relevant positive and negative dynamics happening in the entrepreneurial sector in Italy. This will permit to validate or reject the research hypotheses from both the quantitative and qualitative sides.

Initially, the purpose of the research was limited to the start-ups with a strong link with Universities or their incubators. In particular, this means either being a spin-off, or founded by students and researchers, or finally hosted by a University incubator. However, the research scope has been eventually enlarged to include also start-ups that do not have formal links with the academic institutions. This allowed to compare even better the correlation between the start-up success and the Universities contribution, in order to get helpful conclusions on how the Universities and their incubators could increase the value of the services they offer. In terms of geographical regions, the majority (55 out of 68) among the interviewed start-ups are based in Italy. The remaining ones (13) are operating in the Berlin area, generally considered to be the best hub for start-ups in Europe. This aspect further increases the quality of the analysis outcome when it comes to compare the Italian ecosystem with the Berliner benchmark.

The entire research follows a 3-level representation of the interaction that the start-ups may have with the different actors. The first level is represented by the founding team, together with the human resources, collaborators and partners that it can get from outside. The second level is the ecosystems itself, including regulators, University-related actors and all the kinds of investors (VC's, business angels, banks and similar). Finally, the third level takes in consideration the value chain, that means the suppliers and the customers of the firm. This last aspect can be considered an improvement compared to the existing literature described in the first section. In fact, the relevance of the nexus between a start-up and the value chain has been historically underestimated and consequently less investigated in the past. The reader will realize how this point will bring to relevant considerations for this analysis.

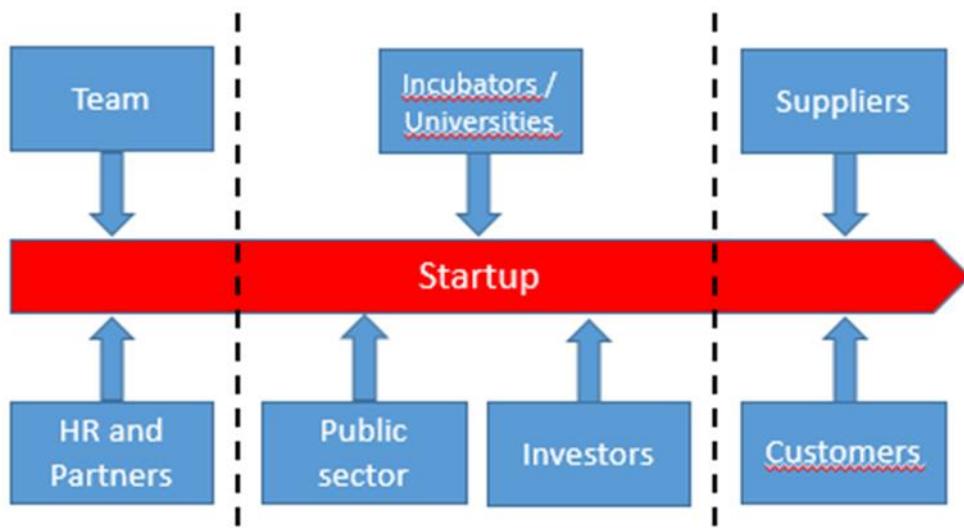


Figure 2.1. The 3-level ecosystem framework used for this analysis

Such a structure in this analysis gives the opportunity to discuss on a crucial paradoxical point. On one side, the traction of the start-up phenomenon in Italy that does not lift off because of a lack of funding, while on the other side the scarcity of Venture Capital in the Country, justified by the fact that Italian start-ups have limited margin of growth (mainly because of the characteristics of the environment around them). Hence, which one of these 2 aspects is leading to the other one? Which is the cause and which is the consequence? Even at the end of this analysis, it will be tough – if not impossible – to answer to this question, but the aim of this research phase is to enrich the discussion with qualitative and quantitative contributions.

To conclude this introduction, it is necessary to illustrate the structure followed for the interviews. This is made essentially of two parts. In the first one, the entrepreneur has been

asked to describe the main aspects of his/her venture; these include its value proposition, the market (industry and geographical area), the innovative content, its origin and evolution and – probably the most relevant point – its size (in terms of revenue, funds collected and age). The information coming from this first section will be used to classify the start-ups into different clusters, based on their features. Instead, the second part of the interview regards strictly the relationship with each actor in the ecosystem. In particular, the interviewed has been asked to describe for each of them the adopted strategy and the positive/negative experiences. The players mentioned in this second section are the ones illustrated in the graph above (founding team, human resources, Universities and incubators, public sector, investors, customers and suppliers). For each actor-start-up relation, a value between 1 and 5 has been assigned to quantitatively rate the success of the relationship (meaning 1 a poor or absent support and 5 a great experience). This second part has been used to evaluate the situation inside each cluster defined using the information from the first section; such a procedure led to the creation of the reference matrix that will be described in the following paragraph.

2.2 Results overview

The best way to summarize and clearly visualize the interviews results of the analysis is the matrix shown below. It divides the singularities into 4 clusters, based on the yearly revenue (with a threshold set equal to 1M €) and the funds collected (with a threshold set at 1,5M €). Within each cluster, the average of the scores for the relationship with each actor is displayed, so that the matrix gives in a glance the idea of which actors are supporting the start-ups effectively and which ones are not.

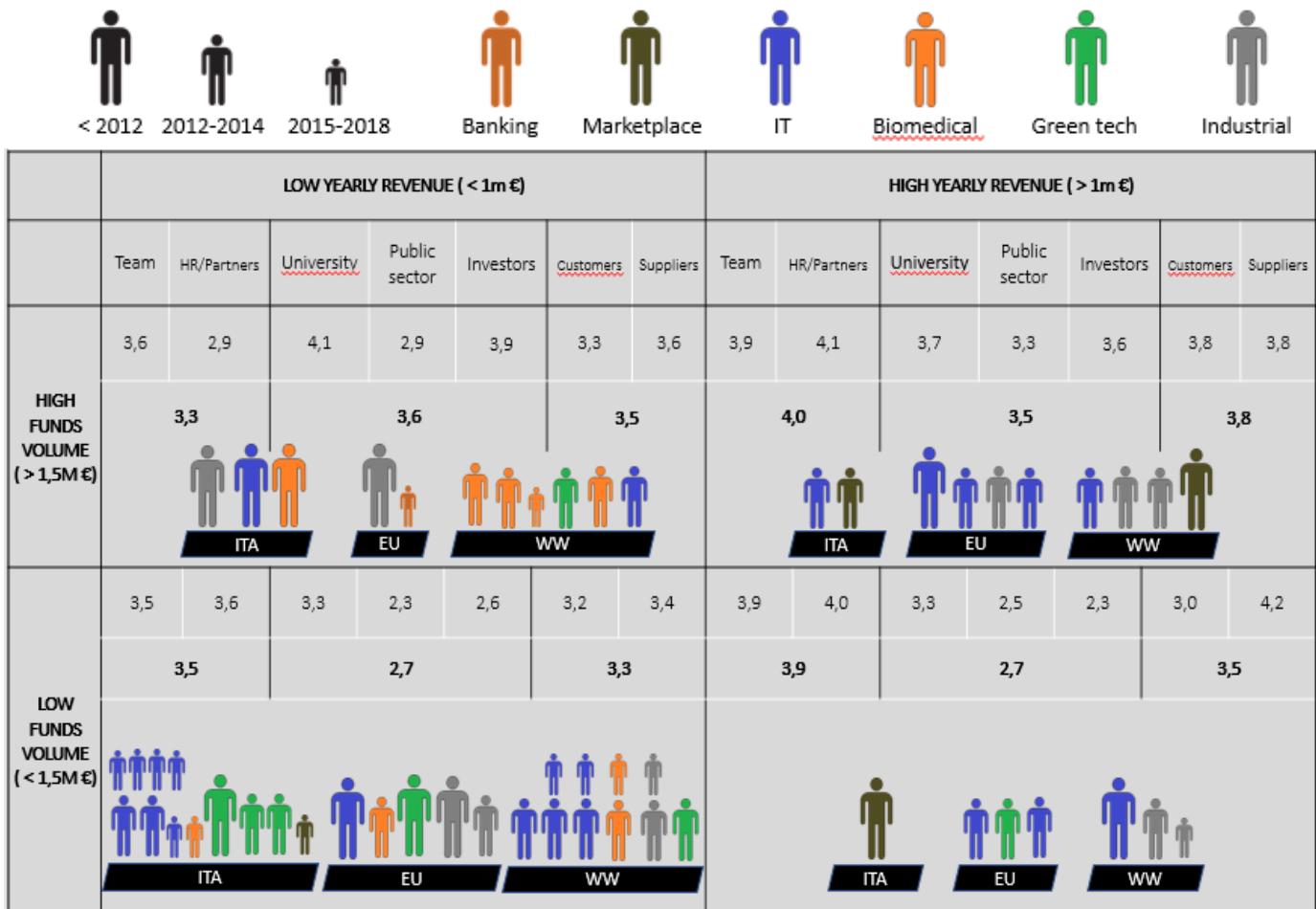


Figure 2.2. The quantitative matrix summarizing all the interviews results

The start-ups journey: bootstrapping or getting funds

Giving the 4 clusters used in the matrix, it is possible to identify the 2 possible paths of a start-up during its evolution. It starts from the quadrant at the bottom left (low income and low funds) and it aims to get the high-revenue-high-funding stage. To reach this stage, it has basically two alternatives: bootstrapping (that means passing through a low-funding-high-revenue phase) or the more traditional way of collecting funds (quadrant at the top on the left).

"Traditional" quadrant	"Success" quadrant
"Base" quadrant	"Bootstrap" quadrant

Table 2.1. Possible growth paths for a start-up

Keeping on this perspective, it is not a coincidence that the number of start-ups following the bootstrap way is lower than the ones that went for funds. On the other side, within the cluster

of ventures that followed the traditional path, it is important to distinguish between the ones that are along the process and the ones that are somehow trapped on that stage and are not able to scale properly. The latter is especially the case for the start-ups founded many years ago and/or have declared to have a European or even Global presence. In fact, this would mean that despite the funds collected and the global customer base, the start-up is still struggling to “complete the jump” to the final quadrant.

Does the success require to be worldwide?

Looking to the matrix, in the quadrant at the bottom on the left (the “starting point” of the journey), 44% of the ventures is operating just in Italy. This percentage slumps when it comes to the following growth stages (14% in the bootstrapping quadrant, 27% in the traditional one, and 20% among the success stories). This confirms the fact that in order to properly scale, the Italian start-ups need to cross the national borders. Obviously, to successfully do so, you must have the resources and the knowledge needed to penetrate foreign markets. This mission starts from recruiting people that are comfortable in operating in international markets and in the majority of the cases, this is far from easy in the Italian ecosystem, where most of the young students are based on an educational system that is still not open enough to put the right emphasis on international projects and programmes.

As an evidence of this argument, when start-ups operate worldwide, the likelihood to success grows significantly: out of the 23 interviewed start-ups operating worldwide, more than an half (57%) has left the “starting quadrant”.

Quantitative highlights

The correlation between the cluster the start-up belongs to and the rates assigned to the relationship with each actor is meaningful. The most interesting points are highlighted below.



Figure 2.3. The most relevant values in the quantitative matrix

Starting from the low-revenue-low-funding quadrant, the extremely low mark assigned to the public sector is evident (2,3); it shows how the start-ups at this stage suffer from the impact with the bureaucracy that affects the first stages of any venture.

We work with different administrations and it is always very tiring, it takes a lot of time, which is costly for us. It is an investment that often does not pay off because at the end it does not lead to anything

In the bootstrapping path, the investors are rated very low and this would explain the decision of pursuing a financing strategy that does not require them. Conversely, start-uppers in this bucket assigned a great mark to the suppliers (4,2, the highest value in the whole matrix); this is supported by the fact that most of the start-uppers in this quadrant emphasized during the interviews the fact that their professional and personal network made the difference for the success of their ventures. It comes without saying that such a network power positively impacted also the creation of strong and effective relationships with the suppliers.

We met one of our main suppliers thanks to one of my Professors; he has been staying with us since the beginning and it provides with high-quality components.

At the other extreme of the matrix, the University is perceived to be really supporting (4,1), but the ventures struggle in finding the right human resources. This is the typical outline of the spinoffs from the Universities: they are well supported by them or by their incubators, but they face big difficulties when approaching the ecosystem outside them.

Finding young talents that have the right skills is not easy as new graduates are not skilled enough to be self-employed in the real world and employees are hardly willing to leave their jobs for a job in an early-stage venture.

Finally, in the success quadrant, it is worthful to underline the high marks given to the founding team and the HR's/Partners. This is linked to the argument mentioned previously: the ventures that succeeded were able to recruit the right people with the skills required to properly scale. It is not a coincidence that these 2 rates are really similar to the bootstrap quadrant, where start-uppers reached a positive traction (high revenue) as well.

It is also curious to see that even in the success quadrant the public sector represents the lowest value in the bucket; however, in this case the rate for this actor is far higher than the equivalent one in the other quadrants (+43% compared to the starting quadrant). In other words, together with recruiting the right human resources, these start-ups managed to overcome the obstacles in building an effective relationship with the public sector (both as regulator and as customer). As an evidence of this argument, there are no start-ups founded after 2014 in the success quadrant, since this process requires some time. Moreover, in this bucket there are no representatives from the Green Tech and Biomedical sector and this could be interpreted as a synonymous of the early (for Green Tech) or tough (for Biomedical) regulation phase happening today in these 2 sectors. However, this argument explains just part of the phenomenon; in fact, if we take the public sector rates by industry, the Biomedical shows the highest value together with IT (2,7), immediately followed by the Green Tech (2,6), with the Industrial sector even behind (2,4).

Industry	Public sector rate
IT and Biomedical	2,7
Green Tech	2,6
Industrial	2,4
Marketplaces	2,2

Table 2.2. The public sector rates by Industry

This leads to the conclusion that in reality the dynamics to build a good relationship with the public sector is not mainly affected by the industry, but it depends case by case, according to the power/ability of communicating with institutions and regulators. Also in this case, the degree of such a power/ability is driven by the effectiveness of the network of the founding teams themselves.

It is difficult to find in the State-owned companies the right insider who is really interested in the needs of the citizen and not just in the bureaucracy.

Once you find this person, at that point it becomes overall simple.

Another perspective to find the root cause of a success/failure in the relation with the public sector is looking at the Region where the start-ups are based. Here, the data speak more clearly: in the success quadrant, all the ventures come from the North of Italy or from Sardinia. Moreover, the ranking of the public sector rates by Region shows that these same regions are at the top of the ranking. If we link these 2 arguments, the correlation seems strong: the region the start-up belongs to is the driver of its relationship success with the public sector and this in turn affects the likelihood to reach the success stage.

Lombardia	4
Trentino	2
Sardegna, Piemonte, Toscana, Veneto	1

Table 2.3. The number of start-ups in the success quadrant by Region

Sardegna	3,3
Toscana, Trentino	3,0
Lombardia	2,7
Campania, Piemonte	2,4
Emilia Romagna	2,3
Lazio, Puglia, Sicilia	2,0

Table 2.4. The public sector rates by Region (only Regions with at least 2 interviewed start-ups are considered)

In Trentino, the situation is pretty good, since the public sector generally fulfills the needs of the Citizens. A nice example is “Trentino sviluppo”, where you can develop innovative projects and also connect with interested investors.

The most relevant issues in the Italian ecosystem

One of the crucial aspects of this research is the fact that it includes qualitative case studies that go beyond the merely quantitative perspective. This means that the contributions by the start-uppers help to get the nuances of a phenomenon – the relationship between start-ups and the ecosystem – that cannot be summarized merely in numbers.

For this reason, the reader can find here below a list of the major deficiencies experienced by the entrepreneurs. Linked to each point, emblematic quotes coming from the interviews will be presented, so that the problem results better described and articulated. As a premise, it is important to say that some of these points could be due rather to a wrong strategy implemented by the start-uppers than a real deficiency in the ecosystem; however, even in these cases, it gives a signal of the missing points in the entrepreneurial Italian mindset.

Actor	Issue	Quote
Team	Lack of members in the founding team that were able to cover some needed specific functions (mainly management, marketing and sales)	<ul style="list-style-type: none"> • <i>We had little experience and ability to manage the business complexity</i> • <i>Incorrect marketing orientation due to a lack of a reference figure.</i> • <i>Nobody had experience in the industrial field within the core team and this has greatly slowed the production process and the start-up entrance in the market</i> • <i>We suffer the lack of a commercial part within the entrepreneurial team</i> • <i>Our strong attribute is to be a homogeneous group that has a similar point of view and oriented in the same direction. Obviously, this meant we were short on other necessary skills like financial and strategic management.</i>
	Too high internal heterogeneity inside the	<ul style="list-style-type: none"> • <i>It is exhausting to manage people with little motivation towards the mission and who thought only to the personal gratification.</i>

Actor	Issue	Quote
	team, at both professional and personal level	<ul style="list-style-type: none"> • <i>It generates conflicting visions and if on the one hand it proves to be a positive effect it generates frictions that are difficult to comply with.</i> • <i>Difference of interests and visions within the entrepreneurial team has led to focus too much on personal interests rather than on those useful for the start-up.</i>
HR, Partners, Collaborators	Difficulty in finding on the market the right human resources, regardless they are junior or senior	<ul style="list-style-type: none"> • <i>It is a historical moment of difficulty, especially in finding developers, because the market is completely unbalanced: there is too much supply compared to the demand.</i> • <i>Difficulty in finding senior resources because specialized people are highly coveted and usually unwilling to work in high-risk ventures</i> • <i>Finding talents, profiles that have the skills is not easy as new graduates are not skilled enough to be self-employed in the real world and employees are hardly willing to leave their jobs for a high-risk job.</i> • <i>It has been quite complex to find human resources with previous experience in our sector and in fact we have also had to rely on head-hunters.</i> • <i>We are inside a war on talents. The staff is very valid but is sought after by large companies</i> • <i>We have big difficult to find young people already skilled for the technologies we deal with</i> • <i>Academics are more focused on research and, for this reason, are less practical at the marketing level; this slows down considerably the entry into the start-up market.</i> • <i>The hardest part for a start-up is to find / have people who do not give up even in difficult moments.</i> • <i>It is difficult to find people with the right motivation and keep this motivation over time.</i>
	Hard to create good partnerships (with suppliers, customers, complementary firms and so on)	<ul style="list-style-type: none"> • <i>The problem with our Region is that people hardly work jointly; we tried to create a consortium with companies similar to us, but here in Sicily it is still not clear that we need to team up to get results</i>

Actor	Issue	Quote
		<ul style="list-style-type: none"> <i>We have had to work hard to find the right partners, because small companies are good and somehow easy to be found, but then for some components we needed larger companies (like Fincantieri for example). With this last type of partners, it takes a lot more time to attract the attention and be able to convince them.</i> <i>With external collaborators, we noticed two major needs: the speed of execution (i.e. consultancy services and quick answers, because we are not plastered in procedures and the market evolves fast) and the sense of belonging to our type of approach (which is something more than just work experience, otherwise the commitment will soon fail).</i>
Universities and their incubators	Lack of support to enlarge the network	<ul style="list-style-type: none"> <i>The incubators are not effective as growth levers for the company since they only provide services (offices) and not the necessary contacts</i> <i>They are not real incubators but institutions that provide rents at favourable prices.</i> <i>It would be nice to have more and more available resources and more accessible channels, without spending too much time.</i>
	Lack of support in the phases following the creation or start of the venture	<ul style="list-style-type: none"> <i>Universities incubators do not give much help in the phases following the creation of the business; they guide the start-up only in the embryonic phases</i> <i>We must also think about a phase of support in the post-incubation stage, because many ventures fail, but the ones that manage to have a future should be kept around the incubator. It seems therefore that they always work on the new that will come and not on keeping what has been positive up to then.</i>
	Different visions or time horizons between the venture and the incubator	<ul style="list-style-type: none"> <i>University has a different time horizon than those of a private company; it is delayed and this slows down the entrance in the external market and limits the possibilities of interaction with external companies.</i> <i>Criticalities overall similar to other start-ups arising from the same context as us, i.e. changing the University</i>

Actor	Issue	Quote
		<p><i>mentality of doing applied research with no interest on the rest of concrete applications.</i></p> <ul style="list-style-type: none"> <i>The pre-incubation and incubation pathways are strict (there are many academics who aim to create or imagine something new, so the incubator must necessarily make selection). The initial approach reminds too much of the teacher-student relationship, without considering that people like us were already professionals in the sector. When we then proved we could have results, then the relationship became more effective.</i>
Public sector	Obstacles in the relations with the customers in the public sector	<ul style="list-style-type: none"> <i>We have not yet understood how to sell to the public actors, because especially in Italy, health and public sector are not doing great</i> <i>The only nuisance is that if a researcher is interested on our product either buys it and then gets the reimbursement, or he starts an endless process to get it purchased through the University.</i>
	High taxation and costs	<ul style="list-style-type: none"> <i>As for the public sector, the costs related to taxation are unsustainable for a start-up. Costs also meant as buying and selling company shares.</i>
	Lack of regulation and constructive dialogue in this sense	<ul style="list-style-type: none"> <i>In our industry, there is no regulation described accurately, so nobody knows how to manage the purchase of these devices, even if they are interested; this because the bureaucracy today is not formed. We are trying to solve it personally.</i> <i>It is difficult to find in the municipal companies the right person inside who is really interested in the needs of the citizen and not just in the bureaucracy. Once you find this person, at that point it becomes overall simple</i> <i>We work with different administrations and it is always very tiring, it takes a lot of time, which is expensive for us. It is an investment often not valued because at the end it does not lead to anything.</i>
Investors	Unwillingness to take risks	<ul style="list-style-type: none"> <i>We have made many presentations and received good comments about the company, but we have never received any funds because the lenders do not understand the</i>

Actor	Issue	Quote
		<p><i>importance and the value of the sector (they are not doctors).</i></p> <ul style="list-style-type: none"> • <i>There are no VC's and BA's in Italy, there is no culture and there is no interest in investing in high-risk and highly innovative companies</i> • <i>Given the complexity of the proposed technology, we had difficulties interfacing with financial actors and making investors get our idea.</i> • <i>VC's and BA's do not want to invest in products that do not know. They prefer to see how they respond to the market and eventually arrive after the business has already consolidated</i> • <i>We have met many of BA's and VC's, but we have not found them open towards innovation, perhaps because the product does not allow to get returns soon.</i>
	Available capital is far lower than the amount needed by the start-ups.	<ul style="list-style-type: none"> • <i>Italian VC funds have been not there, despite our traction and execution.</i> • <i>When we needed money, it was difficult to have credit from banks; the credit was only available at very high rates, there was no convention for start-ups.</i> • <i>We have collected very few funds from Italian ventures and we are still too small to be able to address foreign ventures. In Italy there are too few funds available since the demand is too disproportionate to the supply. There is little money for many.</i>
Customers	Hard to get big customers	<ul style="list-style-type: none"> • <i>A bit with our experience (together with the knowledge of the market in which we operate) and a bit thanks to the fact that we are in a listed group, we have also managed to reach large customers; sometimes we have even been forced to hide the part of start-up privileging the traditional one. I therefore do not dare to imagine those who have beautiful innovative ideas and try to develop them independently.</i> • <i>In finding customers we are suffering from the problem of being small; in other words, the main problem is to succeed in getting to the initial contact. This is a difficult aspect</i>

Actor	Issue	Quote
		<p><i>especially with Public Administrations, with whom we have already worked; downward races are a condemnation for everyone; we offer a certain quality level, not guaranteed by the winner.</i></p> <ul style="list-style-type: none"> • <i>The customer base is limited since our business is mainly oriented to large companies, but they are not willing to take the risk of an overly innovative product</i> • <i>Italian customers want to have the product immediately but pay it deferred as if the start-up were a well-established company. This entails problems related to liquidity</i> • <i>Making partnerships with key suppliers is not very scalable in terms of speed of growth, but it is the only way to guarantee an innovation-compliant supply to our customers.</i>
	Unwillingness to buy an high-risk product	<ul style="list-style-type: none"> • <i>Formally it often happened that customers told us that they would help us, but in reality my impression is that they are not interested in medium-term investments in materials like ours.</i> • <i>We need to find early adopters who can lead case studies, but this research is far from easy.</i> • <i>The Italian ecosystem seems to be open to change, given the number of prototypes that are made, but actually it is not willing to meet a new standard, since customers are not ready to support innovation</i> • <i>The client does not want to bear the risk of a pilot installation. There is no customer willing to take the risk of the test</i>
	Excessive bureaucracy and strongly pyramidal structure on the buyer's side	<ul style="list-style-type: none"> • <i>Difficult to collaborate because the customers have too hierarchical structure, so it is hard for us to talk to company CEOs.</i> • <i>With international clients, you immediately start talking to the boss and close the contracts immediately (1 week by e-mail), while this is not always the case in Italy.</i>

Actor	Issue	Quote
		<ul style="list-style-type: none"> • <i>Italy is characterized by an excessive difficulty in briefly concluding contracts with suppliers due to too much bureaucracy</i> • <i>Closing contracts with customers is an excessively burdensome operation in Italy: too much bureaucracy; to talk to the head of the company you must first go through all the functions of the company itself</i>
Suppliers	Misalignment on the innovation process and lack of competence in realizing the requested products or services	<ul style="list-style-type: none"> • <i>In general, there are many people who say they can do things that they really cannot do. This lack is regardless the size of their structures and leads to mismatch between what was promised and what has been done.</i> • <i>Hardware is an extended component in our products and we struggle to find suitable suppliers; we took a guy in the team that deals only with this, that is, the search for quality components, at a competitive price. Another example is the difficulty in finding the right advice for medical certification.</i> • <i>Suppliers do not always operate in a timely manner, compromising the company's activities.</i> • <i>Many suppliers cannot guarantee delivery times, they always slip</i> • <i>Italian suppliers are lacking experience in the biomedical sector and are therefore unable to supply the requested products</i> • <i>Suppliers cannot respond quickly to the orders received from the start-up.</i>
	Good relationships can be built just with small suppliers	<ul style="list-style-type: none"> • <i>We had to work hard to find the right partners, because small companies are good and they are there, but then for some components we needed larger companies (like Fincantieri for example); with this last type of partner it takes a lot more time to attract the attention and be able to convince them</i> • <i>We have noticed how the Italian company suppliers - that were small by our choice - provided a quality that was lowered even on larger lots. This is due to the fact that</i>

Actor	Issue	Quote
		<p><i>when you found a start-up, you cannot choose reliable and safe suppliers immediately since the first moment.</i></p> <ul style="list-style-type: none"> • <i>The suppliers were very interested in the initial phases of business definition, but the interest proved futile because the quality rate with a supplier turned out to be very low. This is due to a lack of concrete attention to innovation.</i> • <i>We have a symbiotic relationship with small producers, they are the only ones who listen to innovative start-ups</i> • <i>Specialized suppliers do not want to share the business risk with the start-up</i>
	No flexibility in the payment terms	<ul style="list-style-type: none"> • <i>Being in a long supply chain and at the half stage of it, we are under pressure from both sides, because the suppliers ask us for the money, but our customers have not yet sold our products.</i> • <i>Critical initial relationship with the supplier as it required too much guarantee and immediate payments</i>

Table 2.5. Summary of the main issues mentioned by the entrepreneurs during the interviews

2.3 The comparison between the University-based start-ups and the others

Given the original purpose of this research, the majority of the start-ups are strictly related with the Universities, as spin-off ventures or because incubated in their accelerators or finally because founded by Professors and Researchers that leveraged the academical resources (people, assets, laboratories). However, as previously explained, the analysis has been further expanded to include also start-ups with no formal links with the academic context. This gives the possibility to analyse the relationships they created within their ecosystems to see if they are affected by the Universities support. The table below summarizes the emerged results. Also, non-University-based ventures indicate a rate for the Universities; this is because even if they have not formal and strong connections, in most of the cases these start-ups have anyway created a relationship with the academic players (like for instance collaborations on some projects).

	# of start-ups	Team	HR/Partners	University	Public Sector	Investors	Customers	Suppliers	Overall
Success quadrant									
Univ.	6	4,0	3,8	3,8	3,8	3,2	3,7	4,0	3,8
No Univ.	4	3,8	4,5	3,0	2,8	4,0	4,0	3,5	3,7
Bootstrap quadrant									
Univ.	4	3,8	3,7	3,3	2,3	2,3	3,0	4,0	3,2
No Univ.	3	4,0	4,3	3,5	2,7	2,3	3,0	4,3	3,4
Traditional quadrant									
Univ.	6	3,5	2,6	4,8	2,8	4,3	3,0	3,4	3,5
No Univ.	5	3,8	3,2	2,7	3,0	3,6	3,7	3,8	3,4
Base quadrant									
Univ.	19	3,6	3,6	3,3	2,3	3,0	3,2	3,5	3,2
No Univ.	8	3,3	3,6	3,2	2,1	2,1	3,3	3,4	3,1

Table 2.6. The rates comparison between University-based ventures and the others, grouped by quadrant

The first (obvious?) consideration is the positive feedback given to the Universities and their incubators by the start-uppers coming from there. In fact, when the 2 rates got in the same quadrant are not equal (base and bootstrap quadrant), the one coming from University-based ventures is far bigger. This could be interpreted as a positive signal, since all the entrepreneurs are satisfied by the benefits coming from the incubators. However, the real question to be posed is if these benefits are present and tangible even outside the incubator environment (i.e. with the other actors in the ecosystem).

To give an answer, we should look to the differences of the overall averages in each quadrant. If we look to the table above, the numbers tell that there is no discrepancy between the experience of start-uppers coming from Universities context or not. This would mean that joining the academic incubators does not help particularly in building more effective connections with the ecosystem (remember, including the value chain). However, in order to have an unpolluted vision, we should take away from the overall average the rate associated

to the Universities, since the weight of such a rate is different between who created a formal and strong connection with them and who instead just collaborated occasionally. This brings to the values below.

Quadrant	University-based	Non-University-based
Success	3,8	3,8
Bootstrap	3,2	3,4
Traditional	3,2	3,5
Base	3,1	3,1

Table 2.7. The average of all the rates for the University-based start-ups and the others, divided by quadrant

The scenario did not change and confirmed that despite of the positive feedback coming from the interviews, the Universities incubators in general do not seem able to provide with relevant benefits to the hosted start-ups in terms of external network effectiveness.

However, this does not prevent to notice interesting differences (highlighted in yellow in the first table) when it comes to compare the relationships with each individual actor. For instance, in all the quadrants other than the base one, the University-based ventures suffer in the interaction with external HR's and Partners; this could sound a bit surprising since it is logic to assume that the academic context supplies a facilitated access to a high-skilled pool of human resources. It seems then that this link is missing today.

*It has been quite complex to find human resources with previous experience
in our sector and at the end we have also had to rely on head-hunters.*

The interaction with the investors looks instead heterogeneous across the different quadrants. In fact, at the success stage, the rate for the financial players is higher for non-University ventures (4,0 vs 3,2), while it is completely the opposite for the traditional and base quadrants (respectively 4,3 vs 3,6 and 3,0 vs 2,1). This sounds reasonable since the scope of the academic incubators is mainly help the hosted ventures in pursuing the traditional growth path starting from a poor basis. Differently, when a start-up has already reached a good success stage, the power of the incubators tools decrease in effectiveness and the entrepreneurs should integrate the support coming from the University with resources available outside of it.

We must also think about a phase of support in the post-incubation stage, because many ventures fail, but the ones that manage to have a future should be kept around the incubator. It seems that they always work on the new that will come and not on keeping what has been positive up to then.

Finally, there are two further single points worth to be mentioned. The first regards the public sector; among successful start-ups, the ones from the academic context declared a better experience, mainly due to the ability of the incubators to support in the bureaucratic process of early-stage ventures thanks to the economies of scale they can leverage on this regard. However, this scenario is not realized for the other quadrants. The second point is about the customers for start-ups that lie in the traditional quadrant: in this case, the non-University based ventures are the ones that dominate, but also in this case such a difference is not present at all in the other stages of the matrix.

To summarize, there are mainly two insights from this analysis that could help the Universities incubators in increasing the effectiveness of their offer:

1. Consider the possibility of collaborating also with ventures outside the incubator, in order to increase the incubator visibility, its network and the reputation for entrepreneurs even if they are not directly involved in any incubation program.
2. Develop a stronger link between the hosted ventures and the human resources pool available in the academic context; especially for students, such a link could be the first opportunity to discover the entrepreneurial world, the incubator activities and potentially to take in consideration the idea of joining a hosted start-up for an internship or a full-time job.

2.4 The correlation between the industry and the relationships success with the ecosystem

Some considerations have been already made to assess the correlation between the start-up industry and the success of its relationships with the public sector. In order to extend the perspective, this section proposes a similar analysis by industry on the other actors of the ecosystem as well.

The Industrial industry

Quadrant	#start-ups	Team	HR/Partners	University	Public	Investors	Customers	Suppliers	Overall
Success	3	4,0	3,5	3,3	2,0	3,3	4,0	3,7	3,6
Bootstrap	2	4,0	5,0	4,5	2,5	3,0	3,5	4,0	3,7
Traditional	3	4,3	3,0	4,0	3,0	3,0	3,0	4,0	3,5
Base	5	3,6	4,6	3,0	2,0	3,5	3,2	3,6	3,4
Overall	13	3,9	4,0	3,5	2,4	3,3	3,4	3,8	3,5

Table 2.8. All the rates by quadrant for the Industrial industry

The overall landscape in the Industrial industry is pretty successful, with an overall rate equal to 3,5. The negative point of the public sector has been already mentioned and it is worthwhile to underline again how this is happening in all the quadrants indifferently. This could be interpreted as a sign that the regulation in this sector is still not ready to welcome fully the innovation brought by the new entrepreneurial ventures.

On the positive side, the bootstrap path represents a good option for start-uppers willing to launch a business in this industry. In particular, it seems effective in terms of creating a solid network with external human resources and partners, thanks to a good support from the University incubators.

Finally, the value that emerges the most is the high rate that start-uppers in the base quadrant assigned to HR's (4,6). This means that, since the Industrial industry is pretty old, the human infrastructure and network are already developed enough to provide with collaborators supply even to the small ventures.

The IT industry

Quadrant	#start-ups	Team	HR/Partners	University	Public	Investors	Customers	Suppliers	Overall
Success	5	4	4	4	4	3,5	3,6	4	3,9
Bootstrap	3	3,7	3,3	2,7	3,5	1,7	2,3	4,5	3,0
Traditional	1	4	4	3	1	4	3	4	3,3
Base	11	3,5	3,3	3,3	2,1	2,1	3,3	3,3	3,0
Overall	20	3,7	3,5	3,3	2,7	2,5	3,2	3,7	3,3

Table 2.9. All the rates by quadrant for the IT industry

The gap – in terms of overall satisfaction from the ecosystem – between the success start-ups and the other quadrants is evident in this industry. Reaching high revenue is not enough in this sense; in fact, start-ups in the bootstrap phase (that anyway have got a comparable revenue level) show an overall rate that is lower by almost one point (3,0 against 3,9). This is mainly due to the bad experiences with investors and customers. Looking to the qualitative insights got during the interviews, the landscape in this bucket is variegate and brings to different possible explanation of this picture. In one case being backed by a large holding firm has been the only way to overcome the obstacles (with both investors and customers). In other cases, the University incubator was not able to provide with effective connections with investors; in these cases, the start-uppers noticed clearly the unwillingness from investors to put money in new ventures that – by definition – implies the start-up risk. More on the customer side, the size of the target clients makes the difference: when they are too big, the selling is price is for sure higher, but the efforts to get sales is much bigger and in most of the cases do not pay out.

Thanks to our experience in the sector and to the fact that we are in a listed group, we have also managed to reach large customers and investors; sometimes we have even been forced to hide the start-ups side to emphasize the traditional one. So, I cannot imagine the obstacles in front of entrepreneurs who have beautiful innovative ideas and try to develop them independently.

Such an experience with investors is shared also by entrepreneurs in the starting phases: it seems there is a lack of understanding that – especially in the IT industry – the investments on new ventures come with an unavoidable business risk.

The Green Tech industry

Quadrant	#start-ups	Team	HR/Partners	University	Public	Investors	Customers	Suppliers	Overall
Success	0								
Bootstrap	1	4,0	4,0	3,0	1,0	-	3,0	4,0	3,2
Traditional	1	3,0	2,0	5,0	4,0	-	4,0	5,0	3,8
Base	5	2,6	3,8	3,4	2,7	2,0	3,0	4,0	3,1
Overall	7	2,9	3,5	3,6	2,6	2,0	3,1	4,3	3,2

Table 2.10. All the rates by quadrant for the Green Tech industry

Given the limited number of start-ups in the quadrants other than the base one, it makes sense to look directly to the overall figures related to this industry. The bad experience with investors seems due to the different time horizon perspective; generally speaking, most of the start-ups in the Green Tech are oriented to business models that pay back in many years, exceeding – according to the interviewed start-uppers – what is expected by Italian business angels and VC funds.

We met many BA's and VC's, but we did not find them open to innovative solutions, perhaps because our product does not allow to get returns soon.

On the other side, the relation with suppliers is proved to be clearly satisfying. This is particularly true for the ventures that have a clear value proposition that brings relevant benefits to the supply-side of the value chain.

The Biomedical industry

Quadrant	#start-ups	Team	HR/Partners	University	Public	Investors	Customers	Suppliers	Overall
Success									
Bootstrap									
Traditional	5	3,0	2,5	4,3	2,8	4,0	3,0	2,5	3,2
Base	4	4,0	3,3	3,5	2,7	3,0	3,3	3,3	3,3
Overall	9	3,4	2,9	3,9	2,7	3,7	3,2	2,9	3,2

Table 2.11. All the rates by quadrant for the Biomedical industry

The fact that the Biomedical industry is not represented on the right side of the matrix tells already a lot. In particular, the difficulties to consolidate their position in the value chain is hampered by the lack of quality from the suppliers. This is an essential feature required by the ventures in this industry, given the strict safety regulation (that is often vague, and this is the reason for a low grade associated to the public sector) and the high technological content of the products offered on the market.

Italian suppliers are lack of experience in the Biomedical sector and are therefore unable to supply the requested components satisfying the requirements.

It is interesting to notice how the majority of the founding teams in the Biomedical sector are composed by people coming from a technical background, that usually studied together. This

is a great strength, but on the other side implies the difficulty to find (and to be enough open-minded to look for) external collaborators and human resources to fulfil the missing functions inside the team.

Finally, University incubators and investors are the actors that are more interested in this type of value propositions, usually given by the technological content, the potential applications and disruptions that their products could bring. However, as already said, this seems not to be enough to succeed in the market.

The banking and the marketplace industry

Given the limited number of start-ups interviewed for these two industries (1 in banking and 5 with a marketplace-based offer), it is not statistically relevant to provide with any type of analysis to get some practical conclusions.

2.5 The influence of the start-ups Region on its success in the ecosystem

Region	Team	HR/Partners	University	Public sector	Investors	Customers	Suppliers	Overall
Sardegna	4,3	5,0	5,0	3,3	-	4,0	5,0	4,4
Veneto	4,5	5,0	2,0	4,0	4,5	4,0	3,0	4,0
Trentino	3,5	4,0	4,0	3,0	4,5	3,0	4,0	3,7
Lombardia	3,9	3,8	3,4	2,7	3,3	4,0	4,0	3,6
Piemonte	3,4	3,9	3,9	2,4	2,9	3,5	4,0	3,4
Friuli Venezia Giulia	3,0	4,0	5,0	-	2,0	3,0	3,0	3,3
Campania	4,4	2,0	3,3	2,4	3,5	2,6	4,0	3,1
Toscana	3,7	3,5	3,5	3,0	1,3	2,8	3,0	3,1
Lazio	3,7	3,0	3,3	2,0	2,7	2,7	4,0	3,0
Marche	5,0	4,0	1,0	4,0	3,0	2,0	2,0	3,0
Sicilia	2,8	3,5	3,3	2,0	1,5	3,5	3,5	3,0
Emilia Romagna	3,0	2,8	2,8	2,3	3,6	2,3	3,0	2,9
Puglia	3,0	5,0	4,0	2,0	1,0	3,5	1,5	2,7
Overall	3,6	3,6	3,5	2,6	3,0	3,3	3,6	3,3

Table 2.12. All the rates by Region, sorted by overall average

Categorizing the regions for their support to the start-ups risks being simplistic, especially in this type of analysis where the focus was the qualitative aspect of their experiences in the ecosystem rather than the aim of collecting a number of data points that was statistically relevant. However, the ranking shown in the table reflects the different economy situation in the Italian Regions. North and Sardinia clearly dominate the scene. Yet, if we look carefully at the values in the table, in none of the columns the values linearly increase going up in the ranking; in other words, none of the actors considered in this analysis is the variable which the overall start-up success is strictly dependent on. This confirms once more the conclusion that for sure the Region affects the effectiveness of the network, but that at the end the outcome depends case by case.

On a qualitative perspective, the difference between the Sicily and the Sardinia cases is emblematic. In the first one, some entrepreneurs mention the incapacity by most of the colleagues of realizing that to get good results in the market is necessary to collaborate all together. On the other side, the sense of belonging in Sardinia is well deep-rooted and this brings to the high values in the Team and HR/Partners dimension.

We base our activities in Sardinia, getting support from local Universities and recruiting Sardinian engineers that were forced to leave the Region in the past to work abroad but that were fascinated by the idea of coming back home. Consequently, the low employees turnover rate is our strength and is due to the sense of belonging of our staff. We want to demonstrate that it is still possible to create value in Sardinia and in Italy.

The problem with our Region is that people hardly work jointly; we tried to create a consortium with companies similar to us, but here in Sicily it is still not clear to everybody that we need to team up to get results.

To conclude this section, it could be meaningful to compare in particular Lombardia with the other Regions, since it is there that many actions in favour of start-ups movement have been implemented. The result is the table below.

Region	Team	HR/Partners	University	Public sector	Investors	Customers	Suppliers	Overall
Lombardia	3,9	3,8	3,4	2,7	3,3	4,0	4,0	3,6
Others	3,6	3,6	3,5	2,6	2,9	3,1	3,5	3,3

Table 2.13. Rates comparison between start-ups based in Lombardia vs all the other Regions

The real differences emerge in the relationship with the investors (given the importance of Milan as a banking pole for the Country) and in the strength within the value chain. Put differently, the start-up network in Lombardia is already well developed and this leads to relative easiness for the new ventures in affirming their position in the value chain. It is not a coincidence that the biggest related events or projects are located in Milan. Another point reinforcing the dominance of this Region in Italy is given by the fact that among the 10 start-ups coming from this Region, 4 are in the success quadrant (meaning it is the most represented Region in that quadrant) and just 2 in the base one.

2.6 Comparison between Berlin and Italy ecosystem in the IT industry

During the research phase, it has been possible to interview also 13 start-ups based in Berlin, considered by the most as the first innovation hub in Europe, especially when it comes to deep tech. Unfortunately, given their characteristics, it is not possible to fully compare their contributions with the Italian ventures: 11 out of the 13 German start-ups are in the IT sector and in particular 10 can be collocated in the so-called base quadrant of our matrix. Therefore, this section aims to compare these 2 groups of ventures operating in the same industry (IT) and same quadrant, but in the two different ecosystems.

Ecosystem	#start-ups	Team	HR/Partners	University	Public	Investors	Customers	Suppliers	Overall
Italy	11	3,5	3,3	3,3	2,1	2,1	3,3	3,3	3,0
Berlin	11	4,6	3,3	3,9	2,3	2,8	3,6	3,5	3,5

Table 2.14. Rates comparison between Berlin-based and Italian start-ups

Before entering in the proper comparison, it is important to signal the fact that for the majority of the ventures interviewed in Berlin, the actor “University” does not imply necessarily a University incubator; in most of the cases, it refers to a less formal connection, given for example by partnerships, projects developed together and – just in some cases – an exploitation of common resources.

Given this said, as the reader can see in the table above, the major differences come from all the network-related actors. The founding team formation and effectiveness is facilitated by the fact that Berlin has already developed a more positive perception of a career in the start-up world. In other words, when 2 or more people develop together a business idea, they are

more oriented to work on it full-time, even if some of the cofounding members have already a permanent job. In this latter case, sometimes the business idea can be developed in partnership with the employer or even internally. This aspect implies therefore that it is easier to start with an effective and motivated team since the day 1.

The connections with Universities are also often network-based. For instance, some of the founding members are alumni of the school or have a good relationship with some of their previous Professors. Another way to facilitate the creation of these collaborations comes from the Universities themselves, that – again leveraging the alumni and professors' network – propose co-development projects that involve the entrepreneurs, the University and the students. This is the case for example of the ESCP Europe Business School and of the Freie Universität in Berlin, that created the InnoBridge program, that assign small groups of students to each start-ups involved in the programme, in order to help in further developing their value proposition or in solving any type of specific issue.

We were not well-equipped to start, but in this way taking decisions was smoother because we were all aligned with the same mindset. During our studies together, we took part in 2 initiatives: a student-organized congress, with Alumni, Business angels and Venture Capitalist and entrepreneurs and an entrepreneurship course with our University.

Finally, the last discrepancy involves the investors and the explanations of this could be many. First, the number of BA's, VC's, accelerators and incubators is far higher in Berlin. Second (and maybe consequently to the first point), the business risk inherited in the ventures creation is well-known in the German capital; this is in contraposition with one of the problem mentioned previously, that is the unwillingness of many investors in Italy to bear the risk implied by start-ups.

Investors were in general always professional in evaluating our business and giving feedback even if not interested at that moment.

It is possible to define a macroscopic root cause that contains all the discrepancies just described; it is the tendency to collaborate. When a start-upper has the opportunity to live in the Berlin ecosystem, he/she immediately realizes how the city is abundant of coworking

spaces, communities and related events. Given these physical infrastructures, it is far easier not only to find potential collaborators, but also to get insights from other colleagues that have specific expertise on some areas that could be crucial for the development of other ventures. This all happens usually in an informal context. The clear example of this dynamic is “The Factory”, the biggest co-working community in Berlin, that has two locations in the city. Beyond proposing events, free spaces and free coffee, it really connects the members among each other. For example, through the communication Slack channel, any entrepreneur can find easily and quickly a person that is available and willing to help (informally and usually for free) to solve his/her issues. This way to overcome obstacles cut hugely the time spent in creating effective solutions and is generated by people that are experts in their own sector. This is clearly in contraposition with what described here for the Italian landscape, where two of the main problems are the small tendency to collaborate and the difficulties in finding high-skilled people oriented to a job in the start-up sector.

2.7 Discussion on the hypotheses

After the general overview on the results emerged during the study, in this section each hypothesis formulated in the literature section will be assessed, leveraging the content of the interviews.

H1a: when the effectiveness of the relationship with the regulators is perceived (qualitatively) good, the fit into the value chain is also realized (quantitatively) better.

In order to evaluate the validity of this type of statements in this section, a graph that shows the correlation – if any – between a quantitative measure on one side and a qualitative measure on the other side will be used.

In this case, the perception of the quality of the relationship with regulators is given by the corresponding rate indicated by the entrepreneurs during the interviews. On the other side, based on the hypothesis H1a we expect that higher this rate is, higher the revenue will be as well. To filter out the fact that revenue amounts have sizes across industries, the quantitative figures will be shown as percentual difference from the industry average, so that the data points will be compared only within the same industry. The data set shown in the graphs include both Italian and German start-ups since the hypothesis is expected to be valid

regardless the start-up Country of origin. The graph below is the result after filtering out 3 outliers and not considering the start-ups that had no relationship with regulators so far.

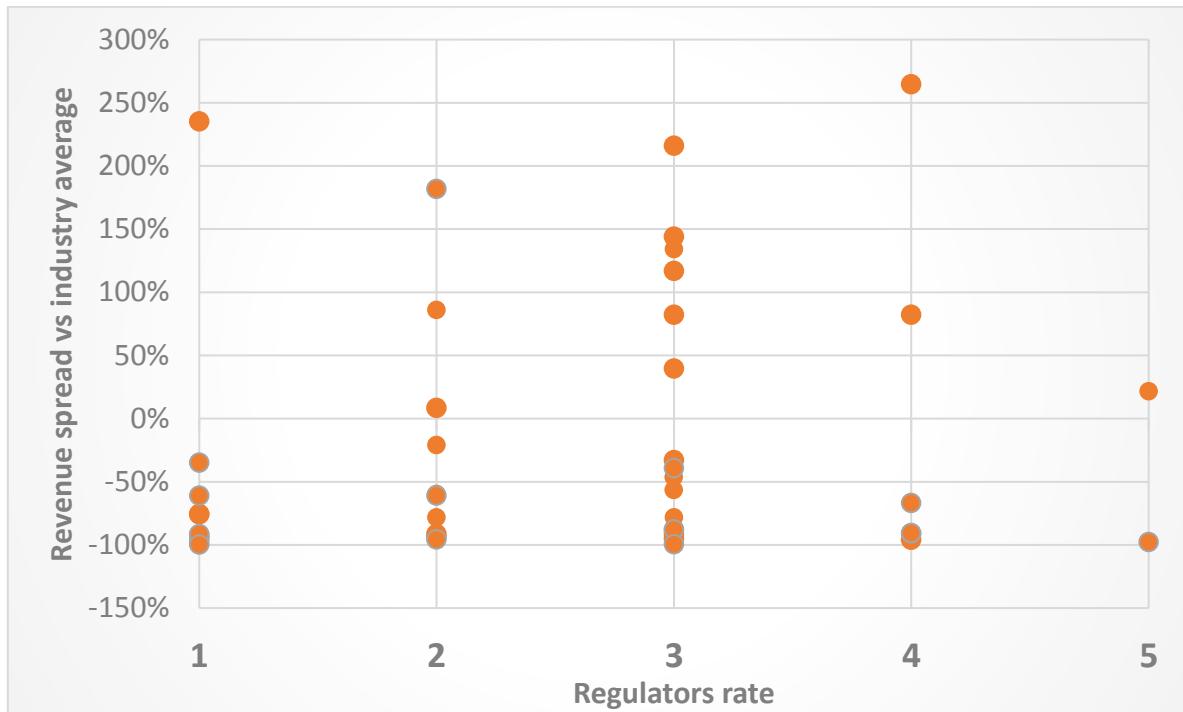


Figure 2.4. Relation between regulators rate and revenue spread versus industry average

Reading the graph above it must be considered that negative values are capped to -100%, since the difference versus the average cannot be higher than the average itself. Based on the research hypothesis, the entire set of points within the same band score was expected to move upwards while moving rightwards in the graph. While this is true for the upper bounds of each score, it is not valid for the lower bounds. In other words, it is true that with the regulators rate increasing the revenue tend to be higher and higher than the industry average; however, at the same time, there will be always venture that – despite the relatively high regulators rate – will get a lower revenue than the industry average. Therefore, the research hypothesis cannot be generally and fully validated.

In addition, the number of points in the positive half of the graph (meaning a revenue higher than the average) does not increase moving up in the regulators rate. As anticipated in the literature review section, this is synonymous of the fact that even when the experience with the regulators is not effective, a portion of entrepreneurs manage to find a way to get a good fit into the value chain. This dynamic is true in all the regulators rate level and an actual better relationship with them does not help in facilitating this challenge for the entrepreneurs.

It is worthwhile to split the data points into different ventures ages to see if with this further granularity the correlation stated by the research hypothesis emerges more clearly.

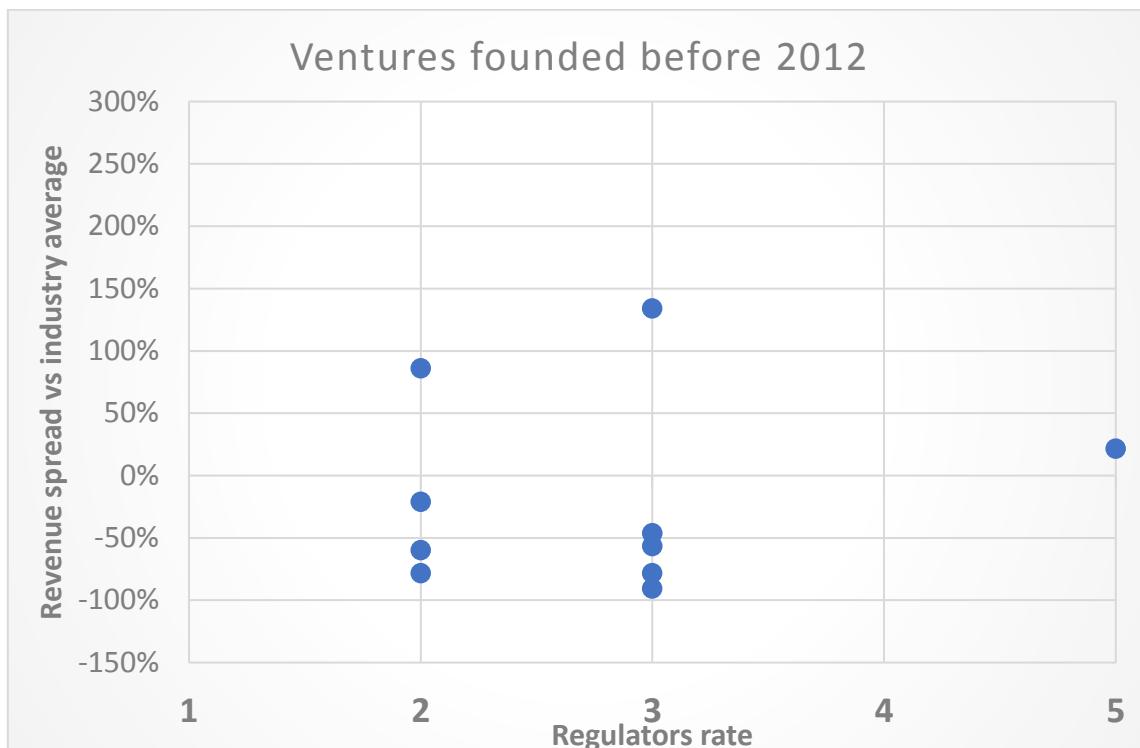


Figure 2.5. Relation between regulators rate and revenue spread versus industry average for ventures founded before 2012

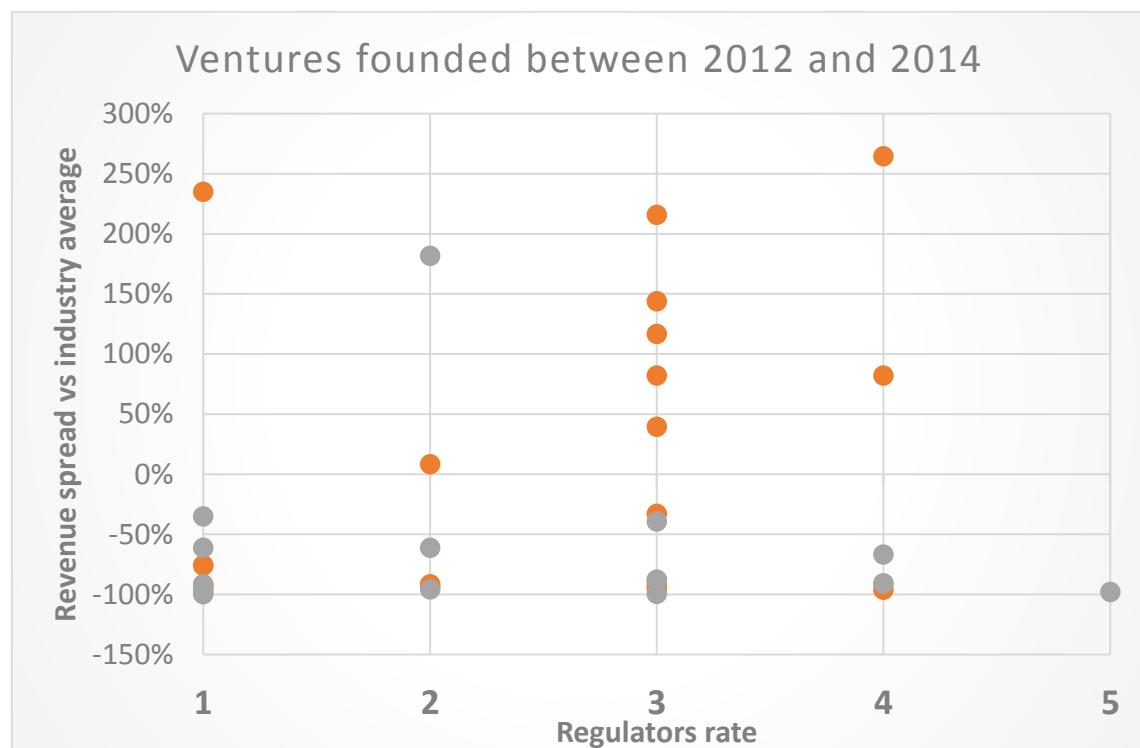


Figure 2.6. Relation between regulators rate and revenue spread versus industry average for ventures founded between 2012 and 2014

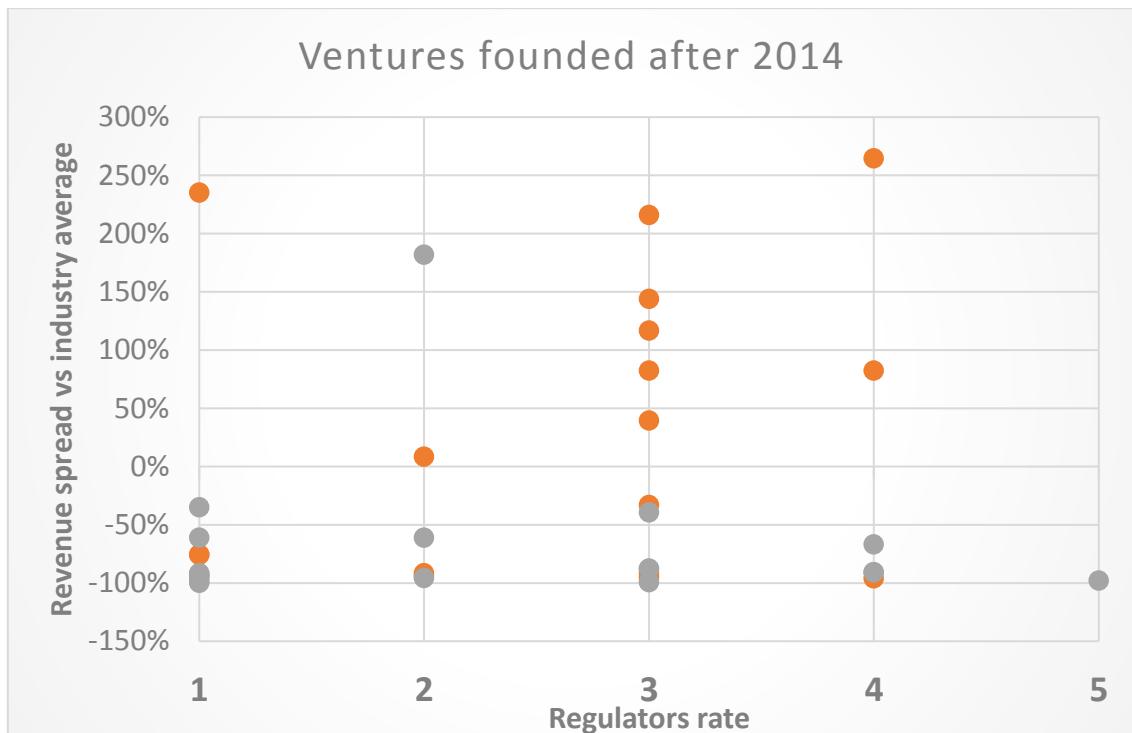


Figure 2.7. Relation between regulators rate and revenue spread versus industry average for ventures founded after 2014

The expected correlation emerges clearly for the ventures founded between 2012 and 2014. In fact, the number of points in the positive half are predominantly in the bands corresponding to higher regulators rates (3 and 4). Instead, for both the other two groups (ventures founded before 2012 and after 2014) a better relationship with public sector does not help in getting higher revenue. Even more surprisingly, for high regulators rates the number of underperforming ventures is higher than the start-ups performing better than the average.

Therefore, we can conclude that for young start-ups and mature ventures, a good relation with regulators does not help in bringing higher revenue. Instead, this correlation is stronger after 4-6 years from the firm foundation.

H1b: it is not possible to find a driver that can ensure that similar start-ups (according to that driver) experience the same satisfaction level in the relationship with the regulators.

A list of these potential drivers includes the industry, the start-up Region, the fact of being University-based or not and the firm age.

Regarding the first two, relevant conclusions have been already reached in the “Quantitative insights” section (page 33 and following). In particular, it has been proved how the average public sector rate does not differ significantly across different industries.

Industry	Public sector rate
IT and Biomedical	2,7
Green Tech	2,6
Industrial	2,4
Marketplaces	2,2

Table 2.15. The public sector rates by industry

Instead, it has been showed that the Region affects significantly the relationship with the regulators, since the start-ups in the North and in Sardinia declared a higher rate of satisfaction.

Sardegna	3,3
Toscana, Trentino	3,0
Lombardia	2,7
Campania, Piemonte	2,4
Emilia Romagna	2,3
Lazio, Puglia, Sicilia	2,0

Table 2.16. The public sector rates by Region (only Regions with at least 2 interviewed start-ups are considered)

In the same section, it has been shown indirectly that also the characteristic of being related with a University does not affect the regulators relationship effectiveness. In fact, both the ventures with such a link and the ones with no connections with Universities gave to the public sector a rate of 2,6.

Finally, regarding the firm age, the last 3 graphs displayed for the previous hypothesis can be leveraged. They show how the mature start-ups mostly gave a rate between 2 and 3, while the youngest between 3 and 4. The ones in the middle (founded between 4 and 6 years ago) are more spread along the spectrum. Almost no entrepreneurs gave a “5”. We can therefore say that younger firms experience a slightly better relationship with regulators, but not at such a level to consider the foundation year as a driver for the relation with the public sector.

To conclude, only the Region of origin of the start-ups is a key driver, with the North and Sardinia being synonymous of a good link with the public sector. All the other ventures characteristics – singularly taken – are not relevant enough to predict the outcome of the experience with the public sector.

H2a: the relationship with investors (both public and private) is more effective in the North than in the South

The surveyed start-ups can been divided in 3 groups: North (Friuli, Piemonte, Lombardia, Trentino, Veneto), Centre (Lazio, Toscana, Emilia Romagna, Marche), South (Campania, Puglia, Sicilia). Here below the corresponding rates attributed to the experience quality with investors.

	Investors rate (average)
North	3,4
Centre	2,7
South	2,6

Table 2.17. Investors rate by geographical area

The figures above are enough to affirm that as expected the North shows a better perceived quality of the relationship with the investors than Centre and South, It will be interesting to see how this rate affects the success in the value chain, that is the topic of the next hypothesis.

H2b: The start-ups-investors relationship is usually perceived (qualitatively) bad. However, even when its effectiveness is perceived (qualitatively) good, this does not necessarily bring to a (quantitatively) better fit into the value chain.

The overall average of the investor rate (only for Italian surveyed entrepreneurs) is 3,0. It is then a neutral picture, for sure better than what expected when formulating this research hypothesis. Obviously, this aggregated average hides many nuances that are worthful to be caught. In this direction, for the second part of the hypothesis statement we must split the start-ups into different levels of satisfaction with the investors and then check if there is correlation between a positive perception of such a relation and the quantitative fit into the

value chain (using the revenue as a proxy). The reader can find here below the graph used to check the existence of such a correlation. As it happened for the regulators, the revenue are indicated as the spread versus the industry average so that the differences between different industries revenue sizes are filtered out.

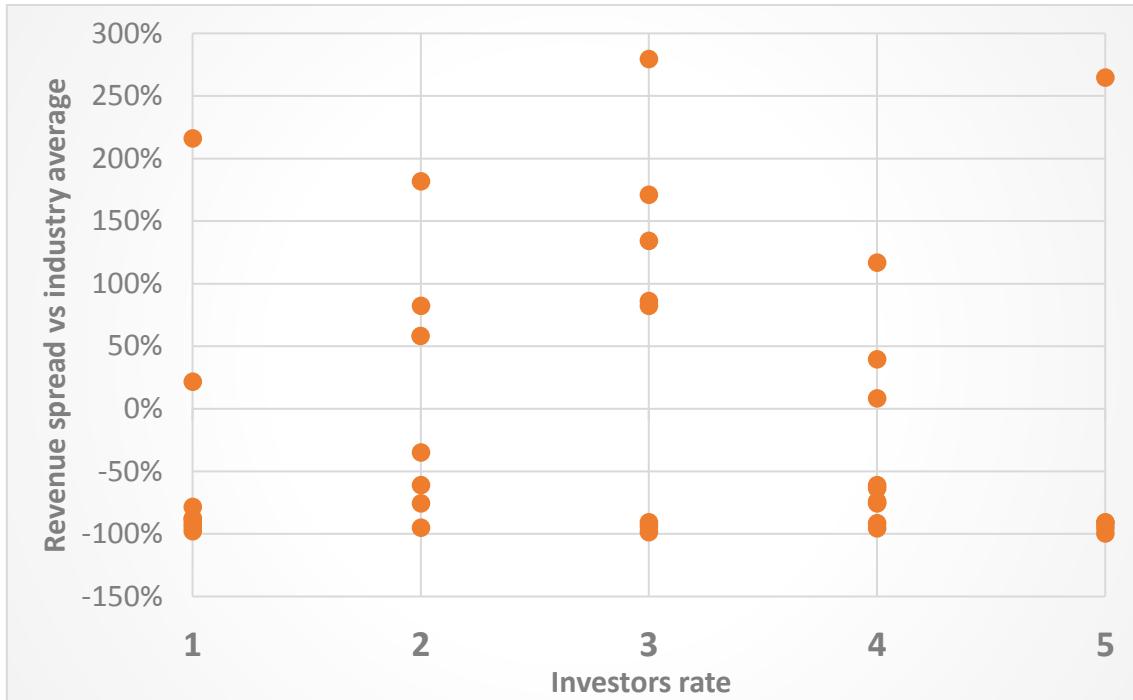


Figure 2.8. Relation between investors rate and revenue spread versus industry average

The correlation is definitely not there. The number of points in the positive half of the graph is roughly the same as the negative one within each score rate. Furthermore, there are no clear trends moving rightwards in the graph, meaning that a relationship perceived positively with the investors does not help necessarily to get more revenue.

Similarly to what has been done for the regulators, relevant insights could be found adding the age filter into the discussion. The graphs regarding the start-ups founded before the 2012 does not bring any new consideration. Instead, in the case of more mature ventures, the trend appears a bit more clearly.

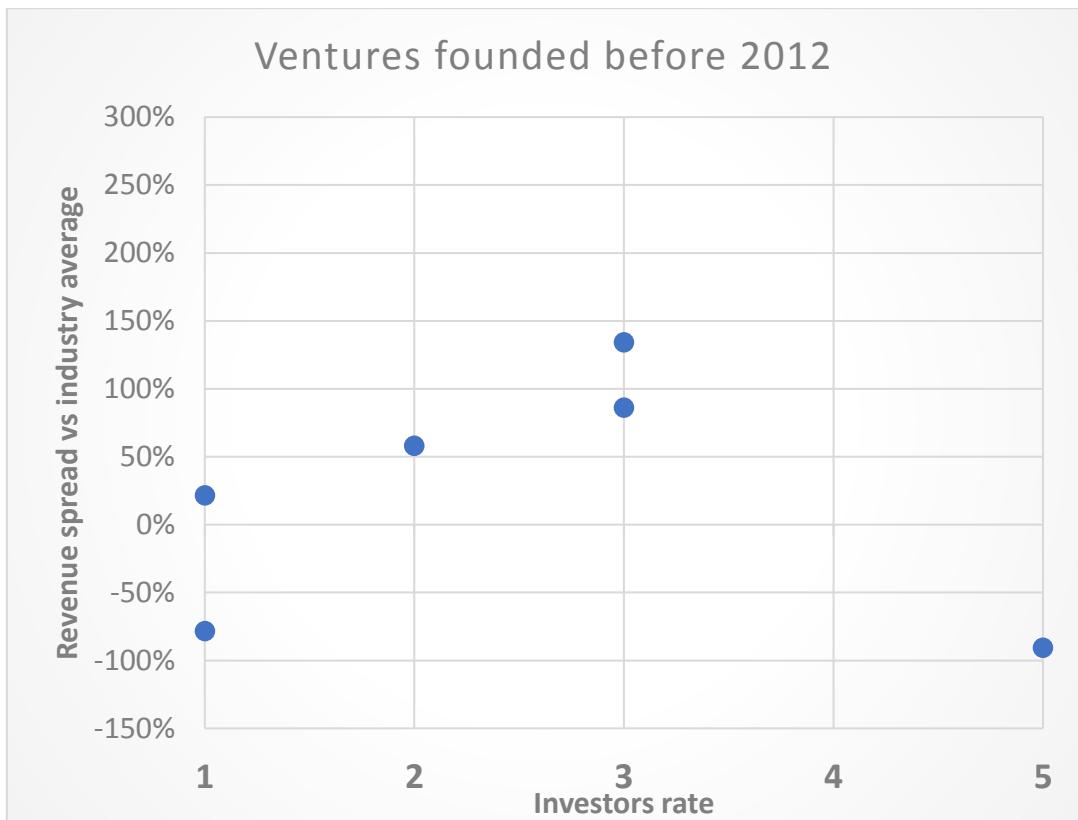


Figure 2.9. Relation between investors rate and revenue spread versus industry average for ventures founded before 2012.

As the reader can see in the graph, there is an increasing trend moving rightwards. In other words, who rated the investors relationship with a “1” got yearly revenue much lower than the ventures giving a “3”. The explanation of this fact and the fact that it is valid only for mature ventures can be found in the long-term horizon used generally by the investors. Alternatively, it could be due to the fact that in any case the investments that a start-up gets need some time before bringing real value added into the firm value proposition towards the value chain.

To conclude, we can state that the relationship with investors is in general perceived neutrally. A positive link with them brings quantitative benefit for the start-up fit into the value chain only for mature ventures.

H3a: Regardless the relationship with incubators being perceived (qualitatively) well or not, the fit into the value chain is (quantitatively) realized in a more valuable way only by mature start-ups (and not necessarily all of them).

In an opposite way to what has been just commented for regulators and investors, in this case it is expected to find no correlation between the qualitative measure (the rate given to the relationship with the incubators) and the quantitative outcome (the start-up revenue).

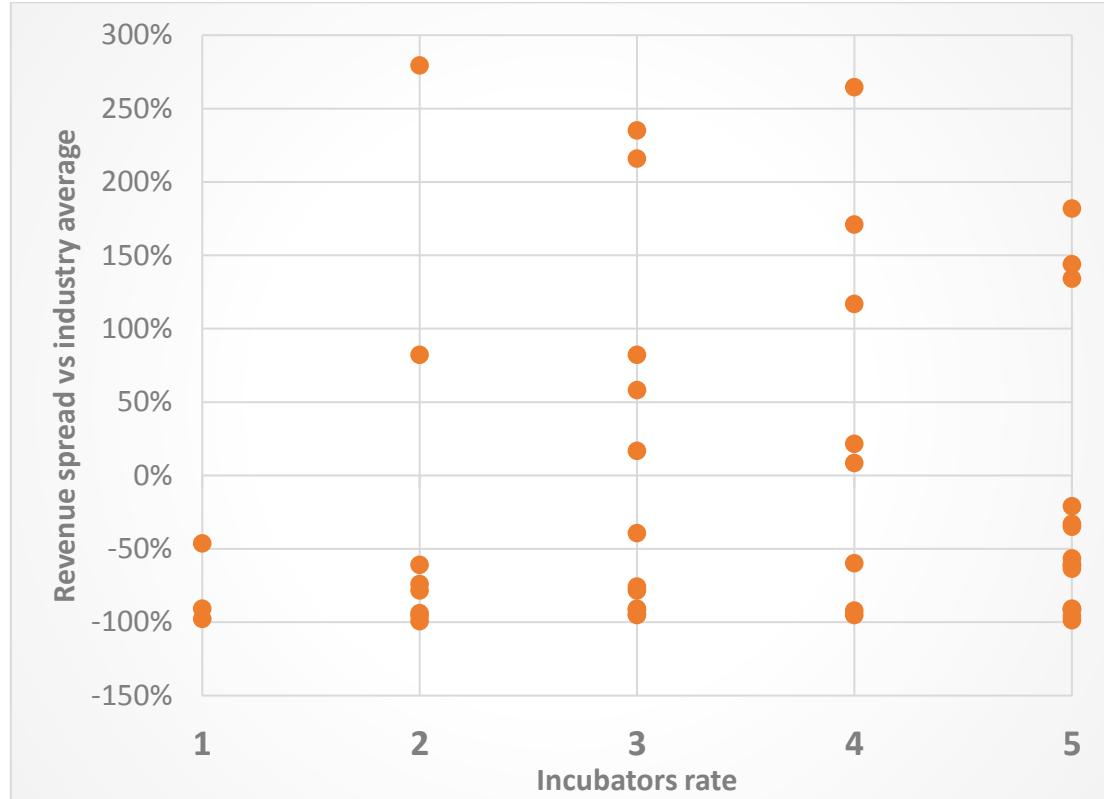


Figure 2.10. Relation between incubators rate and revenue spread versus industry average

As expected, there is no correlation between the satisfaction for the incubation experience and the yearly revenue of the start-ups; the points in the positive half are spread over the different incubators rate.

For the second part of the hypothesis, it must be checked if the points in the upper part – regardless the incubators rate – are the ones related to the oldest start-ups.

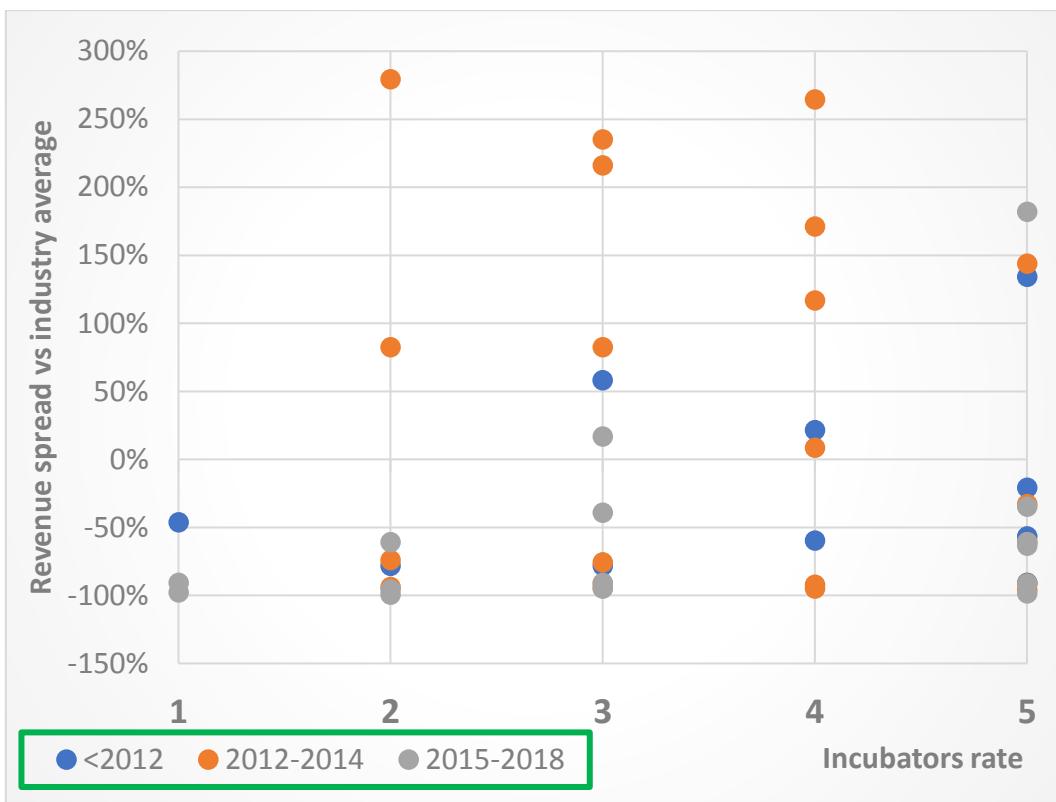


Figure 2.11. Relation between incubators rate and revenue spread versus industry average split by foundation year

Since the graph includes only the data points referring to the start-ups that had an incubation experience in their life, according to the second part of the hypothesis we should expect to see if it is true that the benefits of the incubation period are visible more clearly on the more mature start-ups. In reality, this is not true, as the majority of the points in the upper part of the graph correspond to the ventures founded between 2012-2014. It must be noticed that the more mature ventures (blue points) are relatively more present in the right part of the graph, meaning they generally indicate a good relationship with the incubators. However, we now know that this is not a sufficient condition to bring higher revenue than the industry average.

The fact that the 4-to-6-year-old ventures are predominant in the upper part of the graph might lead to think that incubators have a positive effect in the medium time horizon. However, these points are spread almost equally over the scores between 2 and 4, meaning that they got success even when the benefits from the incubation period were not relevant.

H3b: The incubated ventures perceive qualitatively a better relationship with investors and regulators than the non-incubated enterprises.

As previously explained, one of the major benefits expected from being incubated is the facilitation in creating more effective relationships with the rest of the ecosystem. In particular, the fit into the value chain will be not considered in this case, but the attention will be focused on the other actors only, namely investors and regulators.

	Incubated start-ups	Non-incubated start-ups
Investors rate	3,0	2,6
Regulators rate	2,6	3,0

Table 2.18. Comparison between incubated and non-incubated start-ups on the investors and regulators rates

The picture seems contradictory. On one side, the incubated ventures judge their relationship with investors better than the non-incubated peers. But on the regulators' side, the situation is reverted.

To investigate deeper, it is worthful to add a further level of granularity for the incubated start-ups. In other words, we want to check if the improved relationships with the ecosystem players is got only by the ventures that judge the incubation period positively.

	Incubators rate					Non-incubated start-ups
	1	2	3	4	5	
Investors rate	-	3,6	1,5	3,4	3,4	2,6
Regulators rate	3	2,3	2,3	2,9	2,7	3,0

Table 2.19. Comparison between incubated and non-incubated start-ups on the investors and regulators rates, with further granularity on the first one

Overall speaking, the incubated ventures rate the investors relationship always far better than the non-incubated ones. The similar aggregated average is due to the ventures indicating a neutral experience (rates equal to 3) with incubators; taking them out, the average would be almost one point higher than the non-incubated.

Also on the regulators side, the picture emerged from the previous table is confirmed: the regulators rate is always lower for incubated firms. However, the start-ups indicating a good incubation experience (rates 4 and 5) indicate a slightly better relationship with regulators

than the others. This could mean that good incubators are well working on creating a good network for hosted ventures, but this remains anyway not sufficient to have a positive advantage versus the non-incubated start-ups.

To summarize, incubated start-ups generally experience a much better relationship with investors than the non-incubated. Conversely, incubators are not able to bring benefit to the hosted ventures in their relations with regulators; even worse, when the incubation experience is negative, non-incubated ventures have a better relationship with public sector than the incubated start-ups.

H4a: On average, start-ups that perceive qualitatively a better relationship with the actors in the value chain get better quantitative performances than the others

This statement will be tested as for the previous ones. In this case, the qualitative measure to cross check with the revenue is the relationship with the actors in the value chain, namely and mainly the customers and the suppliers.

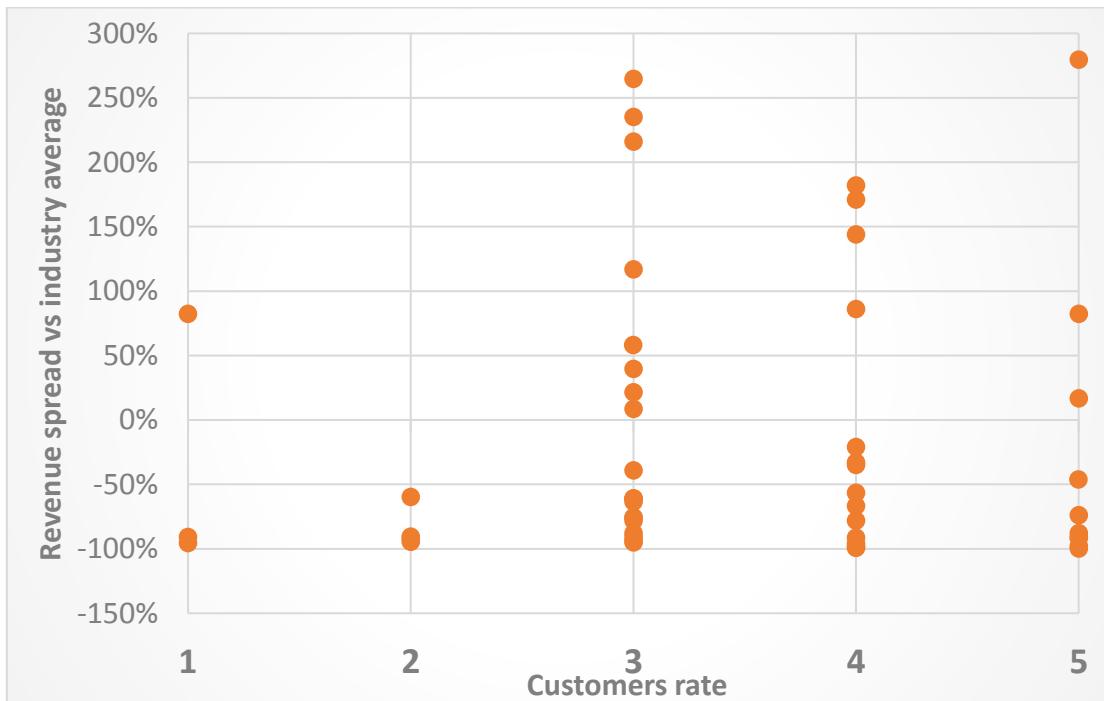


Figure 2.12. Relation between customers rate and revenue spread versus industry average

Taking in consideration the customers rate does not bring to the validation of the hypothesis and leads to think that also in this case the correlation is not there. In fact, for the highest

customers rates (from 3 to 5), the data points are almost equally distributed in the positive and negative sides of the graph. An upward trend going rightward is absent too, meaning that creating better performances with the customers does not bring necessarily more revenue than the competitors.

On the other side of the value chain there are the suppliers. They are more likely to generate benefits for the start-ups since in case of good relationships they can give access to better and qualified knowledge, discounted price, co-development projects and so on.

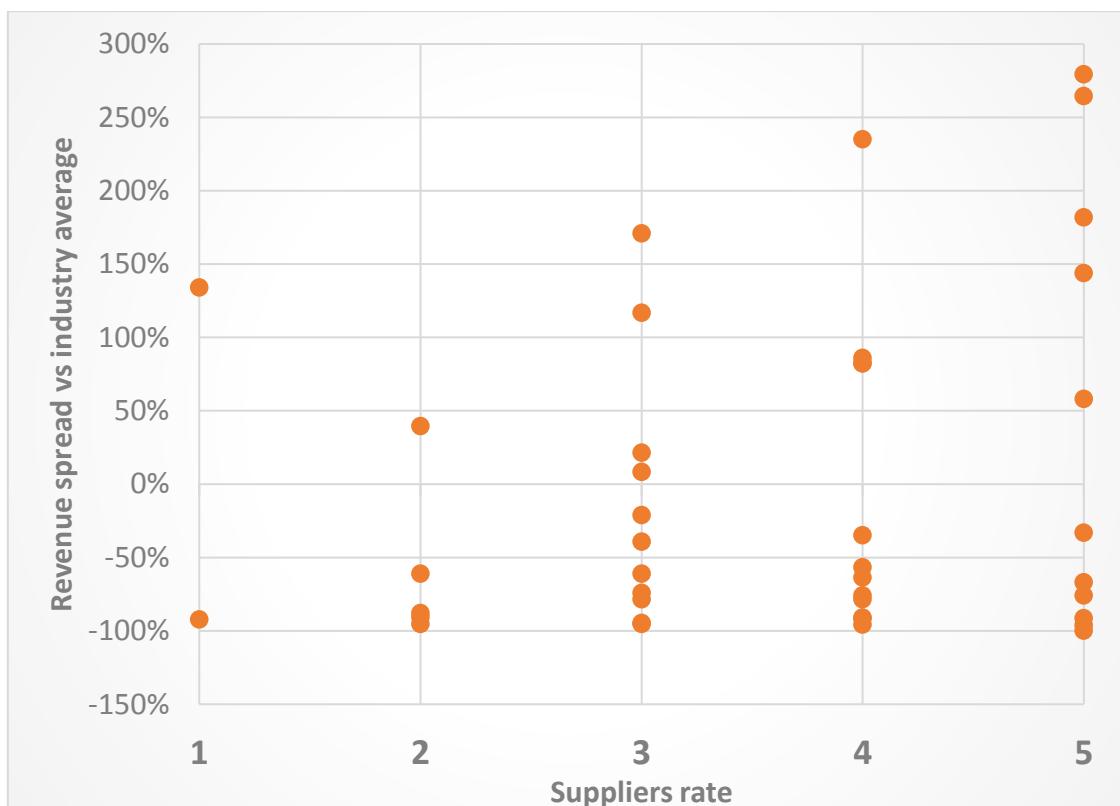


Figure 2.13. Relation between suppliers rate and revenue spread versus industry average

In this case, we can say the graph proves the validity of the research hypothesis. In fact, the points in the positive side of the vertical axis increases both in number and in performances going rightwards. This is not a surprise since also in the literature review, the importance of the business network has been underlined more than once.

To conclude, partnering with suppliers gives a relevant advantage for the start-ups performances, while the customers are not impactful in this sense, even when the relationship with them is perceived good.

H4b: Start-ups partnering with other firms (regardless the size) experience a better fit (as quantitative performance) into the value chain.

This hypothesis is the only one where the start-ups division in groups is not easy, since a partnership can take many different forms and they are not quantifiable. So, the split in the two categories will be given by the mentions and emphasis of relevant partners and collaborations, cited by the entrepreneurs during the interviews.

	# of start-ups	Average revenue spread versus the industry average
Start-ups with partnerships	8	+119%
Start-ups with no partners	47	- 25%

Table 2.20. Comparison between partnering start-ups and the others on the average revenue spread versus the industry average

The emerging picture is the clearest among all the hypotheses discussed so far. The 8 start-ups declaring to have relevant partnerships going on have on average revenue 119% higher than the industry peers and all of them are performing better than the average. This is not a coincidence; it is an evidence that when partnering with more experienced actors in the value chain, start-ups are able to reach far better performances than the ventures that do not create partnerships. Again, these partnerships can take many different forms, more or less formal and with different relationship between the two parties (supplier-customer, codevelopers, parent company and spin-off and so on).

2.8 Conclusions

A recurrent truth that emerges during the validation of the hypotheses in this Thesis is the fact that isolating one single variable to understand its effect in the start-ups life is always difficult, if not impossible. In fact, many circumstances, characteristics and singularities, all combined, result in a unique experience that a specific start-up has with its ecosystem. Despite of this unavoidable feature of the entrepreneurial ecosystems, relevant conclusions have been reached during this study. Four of them are the most relevant and convincing:

- A positive link with investors brings quantitative benefit for the start-up fit into the value chain only for mature ventures.

- In general, the incubators help in building effective relationships with the investors. However, when the incubation experience is negative, non-incubated ventures have a better relationship with public sector than the incubated start-ups.
- Managing good relationships with suppliers bring quantitative benefits (i.e. revenue) to the start-up.
- Start-ups partnering with more experienced firms (regardless their sizes) overperform their industry peers.

Again, these statements try to speak about the relationships of new ventures with one single specific actor. However, each one-to-one relation is affected by the other actors as well. For instance, if a start-up is able to collaborate effectively with a supplier, but at the end it cannot reach its potential customers properly, then the benefit coming from the supplier is vanished.

The considerations above imply some managerial recommendations. When an entrepreneur starts the journey of the creation of a new ventures, he/she obviously tries to leverage all the available literature and theories, so that he/she is more likely to avoid errors and exploit the potential of his/her business idea. However, he/she must take into account that at the end what really makes the difference for the survival and performance of the start-ups is the sum of all the components. The link among all these components is the ability of the start-upper to leverage his/her skills, resources and network to make the mentioned relationships really effective. Saying so, we come back to the concept described in the first part of the literature review: managing a start-up within an ecosystem is a matter of not only the availability of resources and the nature of the actors in the ecosystem, but also of the density of these resources and ability/possibility for the entrepreneurs to benefit from them. As a consequence of this argument, this Thesis cannot provide with a formula that should guarantee the success of a start-up in its relationships within the ecosystem. However, it may be read as a collection of proven guidelines on how different variables (geographical Region, venture size, industry, just to mention some of them) affects the relationships inside the Italian entrepreneurial ecosystem.

For this study, many Italian start-uppers (55) and a relevant number of entrepreneurs in Berlin (13) have been interviewed. Starting from this, further studies might be conducted on

different Regions in Europe to see if the emerging landscape is matching the one described in this Thesis. Doing so, the recommendation is to follow two pillars that guided this research:

- Combine qualitative and quantitative measures. This allows to give voice to the entrepreneurs, but at the same time to support their statements with numbers, to see if their stories are more driven by biased feelings or instead are really supported by proven facts.
- Including in the discussion the actors in the value chain (suppliers, partners and customers) represents a value added of this research. In fact, the relationships with all the players in the ecosystem cannot be fully judged without at the end evaluating them in terms of impact on the quantitative performance (revenue and fundings) for the start-ups and its real fit into the value chain. The clearest example are the incubators: the overall satisfaction by entrepreneurs with their incubation experience is just one side of the story. What at the end really matters is whether this satisfaction brings concrete economic results to the start-up.

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