

Innovative startup localization determinants and origin: A Rome city case study

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ABSTRACT

The aim of this paper is to analyze innovative startup localization determinants, taking into account a range of factors related to town planning subjects, too. We also focused on the role played by the Fab Labs and coworking as well as on startupper characteristics (e.g. age, previous employment status, business motivation, etc.). The analysis is based on a dataset including information deriving from a survey on 127 innovative startups located in the city of Rome at a district level, linked to other business register (administrative archive) data in addition to geo-referencing analysis. Our findings are that logistics are the main determinant of innovative startup localization for older startupper in particular while younger startupper pay more attention to real estate costs and proximity to home. The presence of Fab Lab spaces and coworking is the second determinant, especially for innovative startups located in the city center. Furthermore, our analysis also reveals that the

majority of startupper are people who have previously worked as employees, professionals, etc. on the basis of know-how acquired during their working careers. Moreover, the results suggest that social relationships and the family are the main two contexts in which people develop an entrepreneurial spirit. Finally, policy implications for the town planning agenda linked to entrepreneurship theme are also discussed.

INTRODUCTION

Company start-up is a topic which is closely bound up with innovation and knowledge spillovers (Minniti, 2005; Vittoria and Lubrano Lavàndera, 2014; Vivas, Barge-Gil, 2015) influencing the economy at a territorial level with reference to urban areas as well. The aim of this paper is to analyze the features of Italian innovative startups, focusing on localization factors and considering the case of the city of Rome. Moreover, the paper also aims to test current thinking on the birth and evolution of innovative startups empirically.

The Italian law which legally recognized innovative startups was passed five years ago (law 221/2012, conversion law of Decree law 179/2012 called Decreto Crescita 2.0)¹. It set out specific measures to sustain their competitiveness and growth. A substantial dataset exists on this phenomenon. The Italian startup register contained more than 6,500 firms in early 2017.

The academic literature (Anderson, 2012) sees the birth and evolution of a startup developing essentially via four steps. The first is a purely playful dimension. Nowadays, easy access to low cost technologies allows universal and widespread use of these in a recreational dimension. For example, the Maker Faire exhibition has been taking place in Rome since 2013², demonstrating the rapid growth of technological applications in quantity and quality terms. In this respect, rapid and widespread dissemination of the microcontroller Arduino has been the developmental backbone of this technological dissemination over the last decade.

Once the first, essentially creative step has been taken, the second step requires costly equipment available usually in specific spaces called Fab Labs (*Fabrication Laboratories*) (Gershenfeld, 2012) where simple hunches can be transformed into real projects³. The second step is closely linked to the third step which relates to coworking: open spaces where aspiring startupper can make use of many other collateral services such

¹ http://www.gazzettaufficiale.it/moduli/DL_181012_179.pdf

² <http://www.makerfairerome.eu/it/>

³ For more detailed explanation of the meaning of Fab Lab, see e.g. Vittoria and Napolitano (2017).

as administrative assistance and consultancy. Finally, the fourth step is setting up a firm at which point the project enters the economic sphere and competes in the market.

It is generally believed that startupperes are entrepreneurs who followed all the steps referred to above: one of the aims of this paper is precisely to assess whether this is really the case in Italy, with the help of the Rome case study. In this respect we will look at startupperes' previous status, the environment in which their entrepreneurial spirit develops and the role of Fab Lab and coworking experiences.

As far as the spatial perspective is concerned, the localization factors behind startup creation, especially with regard to the role played by Fab Labs, has been little studied. Thus, a further purpose of this paper relates to innovative startup localization determinants within Rome: we also carried out counterfactual analysis comparing young and less young startupperes. Moreover, we also used specific geo-referencing analysis to verify potential spatial clusters.

The analysis as a whole is based on the results of a survey of 127 innovative startups in Rome, supplemented with information on startup structural characteristics supplied by the innovative startup register held by the Chamber of Commerce.

Therefore, considering innovative startup features and their localization determinants, this paper attempts to provide useful information for urban planning policies in consideration of the influence of the startup phenomenon on the local economy: attracting both financial and human capital; effects on the logistic and infrastructure field; urban requalification and so on.

The remainder of the paper is structured as follows. Section 2 presents the institutional background with an overview of Italian innovative startup law and the literature, highlighting the gaps this paper aims to fill. Section 3 illustrates data and methodology. Section 4 analyzes the empirical results and Section 5 provides discussion.

BACKGROUND

Institutional framework

Over recent years Italy has developed a range of policies to sustain innovation. One of these relates to innovative startups which are legally recognized in an *ad hoc* law (221/2012, conversion law of Decree law 179/2012 called Decreto Crescita 2.0). In Italy all firms are filed in a business register held by the Chamber of Commerce. Innovative startups are also registered in a special section of this register set up by Law 221/2012 to monitor the phenomenon more accurately. The law views innovative startups as limited companies, in common with cooperatives, based in Italy, or another EU country but with a branch in Italy, whose object clause is «the development, production and trade of innovative goods and services of high technological value». The aim of innovative startup regulation is to boost sustainable growth, technological development, entrepreneurship and employment, attracting talent, innovative enterprise and capital from abroad.

More specifically, the law has drawn up a set of requirements which a start-up must respect to be considered innovative. They must: a) have been set up no more than 60 months ago; b) have their main business center in Italy; c) have a yearly production value not in excess of 5 million euros after their second year of business; d) non-profit status e) have as an exclusive or prevalent object clause development, production and trade in innovative goods and services of high technological value; f) not originate from business split-ups or mergers; g) fulfil at least one of the following sub-requirements: g1) R&D expenditures greater than 15% in comparison with the highest amount between the cost and the total production value; g2) one third of the workforce (employees and independent workers) with a PhD or studying for a PhD or two thirds of the workforce with tertiary education; g3) a startup owner with sole rights (inventions, processing software, etc.).

To boost innovative entrepreneurship, the law has set up many incentives for innovative startups which relate to: bureaucratic procedure simplification; lower administrative costs at launch; potential to pay partners through stock option schemes and external service suppliers (e.g. lawyers, accountants, etc.) with work for equity schemes; investment tax

breaks; crowdfunding introduction; easy access to credit; internationalization support.

Literature review

Following Marshall (Marshall 1891) and Jacobs (Jacobs 1970; 1961), innovative and entrepreneurial clusters have been widely studied (Porter 1990, 1996 1998; P; Glaeser 1999; 2000; Glaeser 2001; Audretsch 2003; Feldman and Audretsch 1999; Florida 2002, 2005, 2006, 2012a; Feldman and Florida 1994).

Nevertheless, the role played by location determinants in attracting startups have been studied for the last 15 years. At a macro level, scholars have underlined many factors such as economies of scale, urbanization factors (Gries and Naudé, 2008), social capital (Birley, 1986; Davidsson and Honig, 2003), knowledge base and networking (technological universities, skilled labor, etc.), industry specialization as suitable preconditions in startup set up and success (Beise and Stahl, 1998). In addition, potential startup funding financial sources is a further important precondition (Wach, 2008). Moreover, Florida (2002) has pointed out place related factors because firms based on creative ideas require specific local conditions. “The Boulder thesis” (Feld, 2012) is also worthy of mention as it identifies four determinant factors in startup success: i) an ecosystem made up of universities, investors, government, companies and media; ii) leaders with long-term commitment; iii) a startup community inclusive of anyone wanting to participate in it; iv) ongoing startup community activities to stimulate links between members and enhance value-creation activities.

In the recent digital revolution Fab Labs represent an important expression of community and open innovation, playing a potential determinant role in startup creation and location (Tech et al., 2016; Gershenfeld, 2012; West and Lakhani, 2008). Nonetheless, few empirical analyses on Fab Labs exist⁴ consisting, in Italy, of case studies by

⁴ For first empirical research on Fab Labs see Troxler and Schweikert (2010) which analyzes Northern Europe.

Menichelli and Ranellucci (2014), Bianchini et al. (2015), and Vittoria and Napolitano (2017).

Focusing on the local level, the majority of early studies documented a business and startup shift in the US, including for highly technological firms, from city centers to suburbs, to office and industrial parks dubbed “nerdistans” (Kotkin, 1997, 2000; Florida and Kenney, 1988), such as California’s Silicon Valley, the Route 128 beltway outside Boston, etc.

More recently, over the past two decades, town planners based on Jacobs (1970, 1961) have underlined an inversion, dubbed by Ehrenhalt (2012) “a great inversion”: innovation and entrepreneurial activity develops in the cities where people, talent, and companies are concentrated. Thus, several recent, once again US studies, (Silicon Valley, etc.) have highlighted a shift from the suburbs to cities (Florida 2012b; 2013; 2014; Florida and Mellander 2016; Guzman and Stern, 2016; Frey 2012, 2014). Thus, cities are incubators for new ideas and innovation boosting startup creation (Glaeser, 2007; Glaeser and Resseger, 2010). Recently, Florida and King (2016) and Florida and Mellander (2016) analyzed US venture capital investment and startup activity at a highly detailed local level using zip-code or metro based data: their findings confirm a shift to urban neighborhoods.

Thus, on one hand, few recent studies exist on startup localization determinants especially at a local level, taking into account the role of the Fab Labs and, on the other, the literature underlines the importance of the city in attracting startups. In this respect the aim of this paper is to fill this gap, analyzing startup localization motivations in Rome at a sub-municipality level (districts) highlighting the role of the Fab Labs too, and to identify differences between young and older startupper. Furthermore, we will analyze other important startupper features, too, such as business motivation and previous status (student, employee, etc.).

METHODOLOGY

Database

Our data source is a survey of Rome innovative startups carried out in March 2017. The survey's reference universe was 543 innovative startups registered in early 2017 in the national business register's Special section (Innovative startups) held by Infocamere, the Chamber of Commerce IT firm. Firstly we divided the archive data into four groups according to age (young and non-young⁵) and phone number availability, also using other public firm archives. The results were as follows:

group 1: 72 youth startups with available phone numbers;

group 2: 82 youth startups with no available phone numbers but available email addresses (generic or certified);

group 3: 155 non-youth startups with available phone numbers;

group 4: 234 non-youth startups with no available phone number but available email addresses (generic or certified).

Startups in groups 1 and 3 were interviewed using CATI methods (Computer-Assisted Telephone Interviewing). Startups in groups 2 and 4 were interviewed using CAWI methods (Computer Assisted Web Interviewing) via emails and one reminder where required. The survey was done by a professional contractor with an ad hoc help desk to support startupper in the compilation of a questionnaire designed to gather both qualitative and quantitative information at firm level.

Taking the two methods together, 129 startups were interviewed in total with a response rate of 23.8%. As two questionnaires were missing a considerable number of answers, we considered a dataset of 127 innovative startups: 47 youth innovative startups (37% of the total) and 80 non-youth innovative startups (63%).

Finally, by applying the record-linkage method we built a database (with reference to 127 startups) which gathered both survey and business register related information. Specifically, the entire dataset included: i) survey data on startupper characteristics (educational attainment level, entrepreneur's previous status, business motivation, type of environment

⁵ Youth startups are those in which the entrepreneurs or the majority of business partners are under 35 years of age.

in which entrepreneurial spirit developed), the role played by the Fab Labs and co-working in firm set up and localization (at a district level⁶) and its determinants; ii) while the business register's special section offers a large structural statistic database, such as activity sector, legal form, size class, share capital class and also R&D, highly educated staff and ownership of sole rights characteristics (required by law).

This dataset was analyzed statistically (the results are reported in the next section) based on frequency distribution.

EMPIRICAL RESULTS

Structural statistics

Table 1 displays the structural features of the innovative startups interviewed. Representing the most advanced segment of entrepreneurship, almost half (40.9%) of the innovative startups studied operate in the information technology sector. The R&D sector accounts for 15% of the total and one third is accounted for by other service activities. Finally, 11% of the total works in the industry sector.

By size class, around 90% of the innovative startups studied are micro firms (fewer than 10 employees), almost equally distributed between 1-4 employees (44.9%) and 5-9 employees (41.7%). As an effect of their small size, two thirds of the innovative startups (exactly 66.1%) have a share capital of 10,000 euros or less whilst 22% have share capitals of 10,000-50,000 euros with only 11.8% over 50,000 euros.

The most widespread requirement fulfilled is R&D expenditure at 78.7% of the total. While the highly educated workforce criterion is less achieved (32.3%) and this is even more the case of sole rights (16.5%). Moreover, a large majority of innovative startups (78%) fulfills only one of these three requirements with just a few cases in which all three requirements (5.5%) or two requirements out of three (16.5%) are respected.

As we have seen, youth innovation startups represent over one third (37%; 47 out of 127) of the total startups interviewed. Another interesting feature is startupper educational attainment level: a large

⁶ Rome is divided up into 15 districts.

majority are graduates (84.3%) and a significant percentage of these are postgraduates (over half of those with tertiary education). Thus, only 15% stopped at higher secondary (including post-secondary) school and 0.8% a lower secondary education.

Localization and its determinants

Table 2 presents localization data. A majority of innovative startups are located in municipality no.1 ('the city center'): almost one third (30%) of those reporting a municipality basis. In such cases the "youth factor" is significant because youth innovation startups in the city center account for 25.6% as against 32.8% non-youth (the appendix geo-references startups by age class).

Identifying the reasons behind this difference requires analyzing startup localization determinants (table 3). First of all, the first factor affecting choice of startup localization is logistics (indicated by 25.2% of the total) followed by another three factors concerning: the presence of coworking spaces, Fab Labs and business accelerators (18.9%); proximity to home (18.1%); and real estate benefits such as rental costs, physical spaces, etc. (16.5%). For youth innovation startups two factors predominate in choice of location as compared to non-youth startups: real estate benefits (27.7% versus 10%) and proximity to home (27.7% versus 12.5%). Both factors are linked to costs, which is more significant for young people.

From a geographical point of view, two factors relate to differences between city center and other areas of the city: the potential for coworking, Fab Labs and business accelerators, which are more significant in the city center (31.3% versus 14.7%), and real estate benefits which are probably more determinant in others areas of the city where rent prices, for example, are lower (20% versus 6.3%) (table 4).

4.3 Fab Labs and coworking

Fab Labs are still not a widespread phenomenon with only 3.9% of innovative startups originating in a Fab Lab and no significant differences between young and non-young startupper (table 5). Coworking is more widespread, since 25.2% of start uppers emerged in a coworking context, a figure which is slightly higher for youth as

compared to non-youth firms (27.7% versus 23.8%) and in graduate startupper (28%; only 10.5% in the case of upper secondary school).

Coworking experiences play a determinant role for firms because almost all startups (90.6%) which have this type of experience evaluate it quite or very important to their development, as do those emerging from a Fab Lab context (95.5% of the total of the startups with a Fab Lab experience), though the latter is much less common as we have seen.

It is interesting to underline that startups originating with coworking experiences are linked to a greater extent to highly educated workforce requirements (37.5% fulfill this condition) as compared to the others (30.5%).

Previous status, business motivation and environment

Other startupper features enquired into include the previous status of the startupper (table 6): the majority were professionals (33.1%), followed by employees (22%) and former entrepreneurs (18.9%). A small percentage were researchers (10.2%) and even fewer professors (3.9%). Students looking for their first jobs were very few (4.7%). Thus innovative startup usually involves people with work experience.

What drives people to set up in business? In accordance with the above, the most widespread motivation is giving value to know-how acquired during a professional career (indicated by 29.9% of startupper) (table 7). The second also relates to giving value to know-how but in this case it is a question of course of study related know-how (24.4%). Thus, innovative startup stems from an ambition to take advantage of one's know-how. In fact, the third motivation is a question of taking advantage of one's knowledge of the market (12.6%). The fourth is financial and personal ambition (11.8%). Our analysis by age highlighted a number of differences: younger as compared to less young startupper are more driven by a desire for personal and financial success (19.1% versus 7.5%) and by dissatisfaction with their previous jobs (10.6% versus 3.8%).

Furthermore, where do startupper generally develop their entrepreneurial spirit? The social context is the best environment, signaled by over one third of the total (37%) with the family coming

second (16.5%) and coworking third (11.8%), thus confirming its importance in the development of the innovative startups phenomenon. At the same time, it is important to underline the academic environment, which accounts for almost 20% if we add up postgraduate studies, ventures with researchers and professors and educational labs (table 8). Lastly, innovative startups show considerable international openness with 66.1% having relationships with foreign countries (table 9). More specifically, these relationships mainly concern project development (signaled by 35.4% of those with international relations), and sale of goods/services (32.3%) contrasting with purchases (11%).

DISCUSSION

This paper enquires into innovative startup localization determinants and analyzes how they originated. Special attention was paid to the differences between young and older startupper and the role played by Fab Labs and coworking. We studied the city of Rome by means of the results of a survey linked to other information available from administrative archives.

Our findings provide useful information for city planning policies, too. Logistics emerged as the main determinant of innovative startup localization and thus town planning action should take this into account in their agendas as logistics impact on business appeal, particularly with reference to suburb requalification where there are fewer innovative startups.

Moreover, although the existence of Fab Labs and coworking is the second determinant, we found that only a few startups emerged from Fab Lab experiences. Nevertheless, startupper from Fab Labs and coworking recognize the important role played by this accelerator. Thus, urban policies aiming to foster area development through business attraction should also consider this aspect and define spaces dedicated to Fab Labs and coworking at a local level. At the same time we also need to raise awareness of the potential of these business accelerators.

Our analysis also reveals that the majority of startupper are people who previously worked as employees, professionals, etc. It is no coincidence

that the main business motivation cited is giving value to know-how acquired at work. Thus, innovative startups are not only young people on their first jobs, probably with Fab Lab or coworking experience, as is underlined in the thinking on the Makers.

Finally, we found that social relationships and the family are the main two environments in which people's entrepreneurial spirit develops and the role of university is also significant. These two aspects can be considered simultaneously because developing networks between academic world and society can sustain innovative entrepreneurship.

As far as our findings are concerned, Industry 4.0 industrial policy could potentially play an important role in supporting urban policies through a stronger connection between town planning, logistics infrastructure, business accelerators and universities.

Since few studies have been conducted on the startup phenomenon (including for Italy), especially from the town planning point of view and with reference to the role of the Fab Labs, our contribution is a first step in filling this gap. Its main limitation is naturally the circumscribed scope of an analysis limited to the city of Rome. Further studies might be the following: similar studies in other Italian towns; an in-depth examination of the role of the Fab Labs and coworking spaces to understand their strengths and weaknesses; an analysis of the determinants of innovative startup performances, for example by localization or startupper origin.

Statistical Appendix

Table 1. Structural features (distribution %)

<i>Economic sphere</i>	
Industry	11.0
Information technology	40.9
R&D services	15.0
Other services	33.1
<i>Size class</i>	
1-4 employees	44.9
5-9 employees	41.7
10 and over employees	13.4
<i>Share capital</i>	
Up to 5,000 euros	16.5
5,001-10,000 euros	49.6
10,001-50,000 euros	22.0
50,001 and over	11.8
<i>Requirements*</i>	
R&D	78.7
Highly educated workforce	32.3
Sole rights	16.5
<i>Age class</i>	
Under 35 (youth startups)	37.0
35 and over (non-youth innovative startups)	63.0
<i>Educational attainment level</i>	
Primary, primary and lower secondary education or less	0.8
Higher secondary education	15.0
Tertiary education	84.3
Total	100.0

* The total is over 100% because startups can fulfill more than one requirement.
Source: own elaboration of survey data.

Table 2. Localization: differences between youth and non-youth innovative startups (distribution %)

	Youth startups	Non-youth startups	Total
I (city center)	32.8	25.6	29.9
II	9.4	4.7	7.5
III	4.7	2.3	3.7
IV	4.7	0.0	2.8
V	1.6	7.0	3.7

VI	1.6	1.6	4.7
VII	1.6	9.3	4.7
VIII	4.7	0.0	2.8
IX	7.8	7.0	7.5
X	0.0	4.7	1.9
XI	3.1	7.0	4.7
XII	4.7	4.7	4.7
XIII	0.0	0.0	0.0
XIV	4.7	2.3	3.7
XV	7.8	2.3	5.6
Outside Roma Capitale	10.9	18.6	14.0
Total	100.0	100.0	100.0

Source: own elaboration of survey data.

Table 3. Localization determinants: differences between youth and non-youth innovative startups

	Youth startups	Non-youth startups	Total
Logistics	4.3	37.5	25.2
Existence of Fab Labs, coworking and business accelerators	17.0	20.0	18.9
Proximity to home	27.7	12.5	18.1
Real estate benefits (rental costs, etc.)	27.7	10.0	16.5
Proximity to universities and research centers	12.8	8.8	10.2
Presence of similar firms (e.g. technological districts)	2.1	3.8	3.1
Demand for innovative goods/services	6.4	0.0	2.4
Other	2.1	7.5	5.5
Total	100.0	100.0	100.0

Source: own elaboration of survey data.

Table 4. Localization determinants: differences between city and suburb based innovative startups

	Municipality I (city center)	Other municipalities	Total
Logistics	21.9	26.3	25.2
Existence of Fab Labs, coworking and business accelerators	31.3	14.7	18.9
Proximity to home	15.6	18.9	18.1
Real estate benefits (rental costs, etc.)	6.3	20.0	16.5
Proximity to universities and research centers	12.5	9.5	10.2
Presence of similar firms (e.g. technological districts)	0.0	4.2	3.1
Demand for innovative goods/services	3.1	2.1	2.4
Other	9.4	4.2	5.5
Total	100.0	100.0	100.0

Source: own elaboration of survey data.

Table 5. Dissemination and importance of Fab Labs and coworking

<i>Startup developed in a Fab Lab</i>	
Yes	3.9

No	96.1
<i>The importance of Fab Lab experiences in startup progress</i>	
Quite/very important	95.5
Not very or not important	4.5
<i>Startup developed via coworking</i>	
Yes	25.2
No	74.8
<i>The importance of the coworking experience in startup progress</i>	
Quite/very important	90.6
Not very or not important	9.4
Total	100.0

Source: own elaboration of survey data.

Table 6. Previous status of startupper

Professional	33.1
Employee	22.0
Entrepreneur	18.9
Researcher	10.2
Students looking for their first jobs	4.7
Professor	3.9
Manager	2.4
Worker	1.6
Other	3.1
Total	100.0

Source: own elaboration of survey data.

Table 7. Business motivation: differences between youth and non-youth innovative startups

	Youth startups	No-youth startups	Total
To give value to know-how acquired during professional career	19.1	36.3	29.9
To give value to know-how acquired during education	23.4	25.0	24.4
Potential for knowledge-of-the-market based opportunities	10.6	13.8	12.6
Financial and personal ambition	19.1	7.5	11.8
Dissatisfaction with previous job	10.6	3.8	6.3
Potential to act as supplier to previous occupation firm	2.1	5.0	3.9
Potential to take advantage of subsidies and incentives	4.3	3.8	3.9
Need to find employment	0.0	2.5	1.6
Other	10.6	2.5	5.5

Total	100.0	100.0	100.0
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Source: own elaboration of survey data.

Table 8. Entrepreneurial spirit development environment

	Total
Social relationships	37.0
Family	16.5
Coworking	11.8
University: post-graduate studies	7.1
University: ventures with research and professors	7.1
University: educational labs	3.9
Higher secondary school	1.6
Other	15.0
Total	100.0

Source: own elaboration of survey data.

Table 9. Startup internationalization

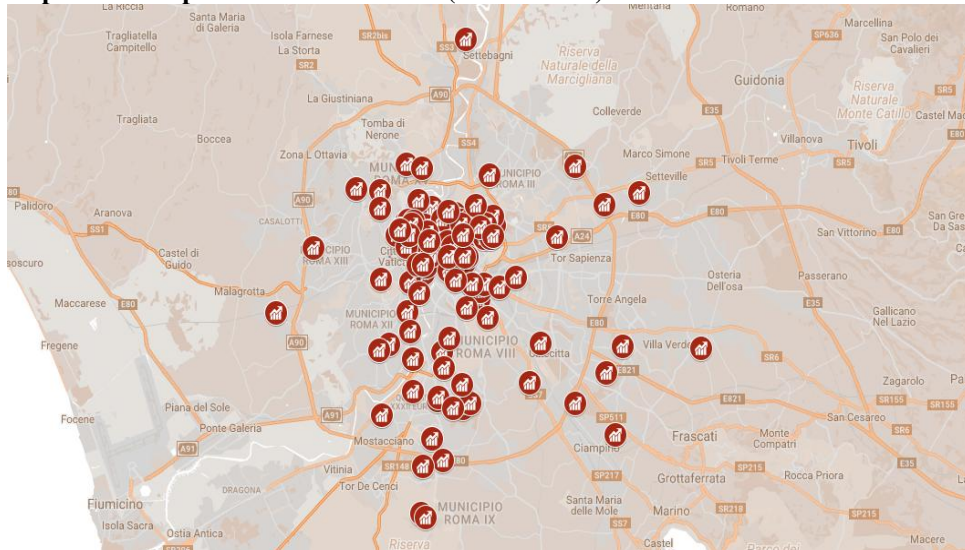
	Total
<i>International relationships</i>	
Yes	66.1
No	33.9
Total	100.0
<i>Type of international relationship*</i>	
Project development	35.4
Sale of goods/services	32.3
Partnerships	26.0
Fairs	15.0
Goods/services purchase	11.0

* The total is over 100% because the question was multiple choice.

Source: own elaboration of survey data.

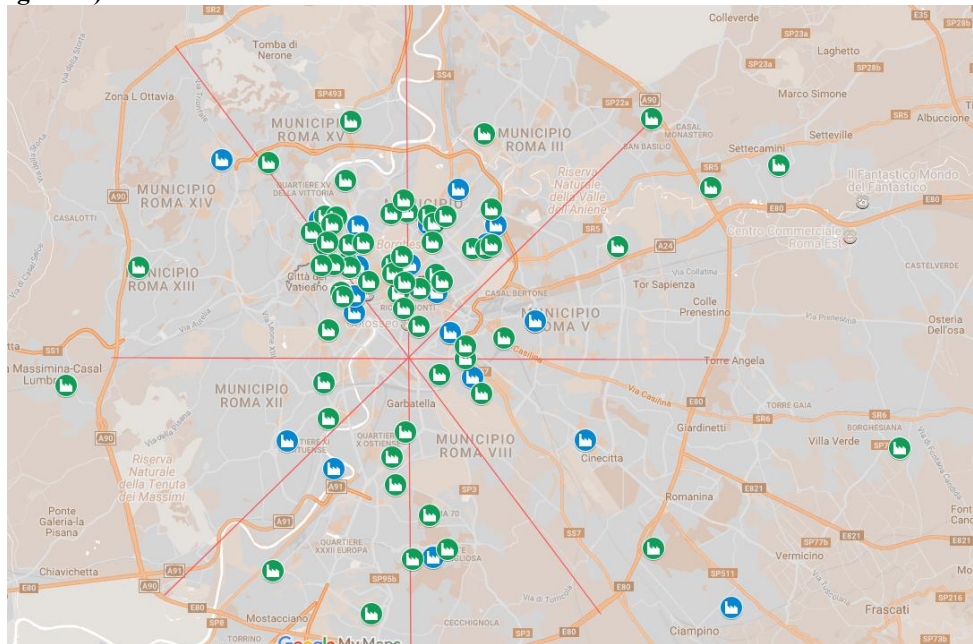
Map Appendix

Map A1. Startup distribution in Rome (all 127 cases)



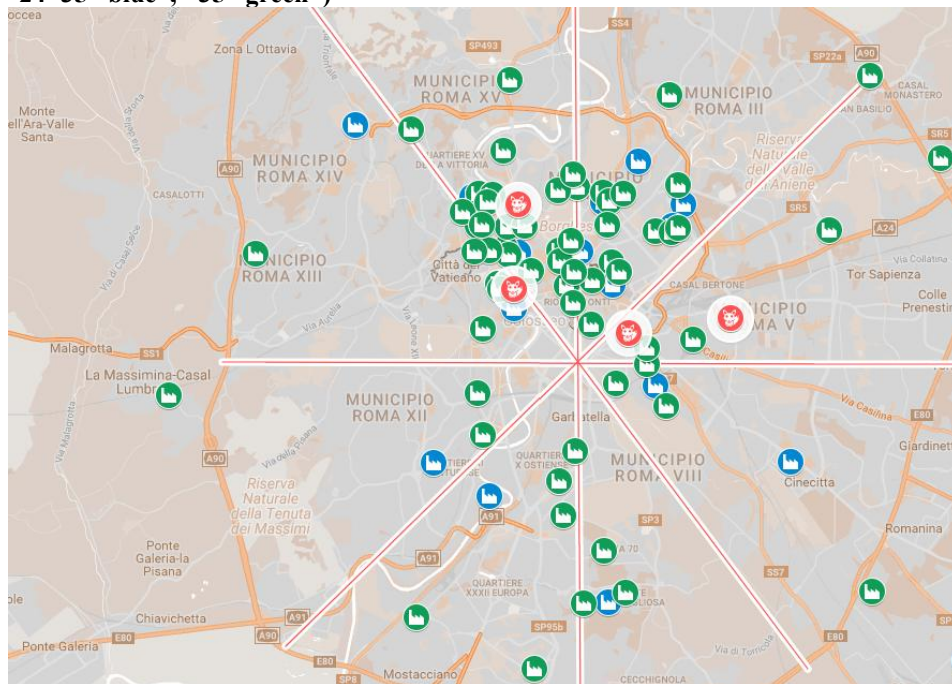
Source: own elaboration of survey data.

Maps A2. Startup distribution in Rome (class birth year: age <35 “blue”, >35 “green”)



Source: own elaboration of survey data.

Maps A3. Startup distribution in Rome (class birth year: age<24 “Red Fox”, >24<35 “blue”, >35 “green”)



Source: own elaboration of survey data.

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