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The Startup Europe Ecosystem

Analysis of the Startup Europe projects and of their beneficiaries

Fiammetta Rossetti, Daniel Nepelski and Melisande Cardona

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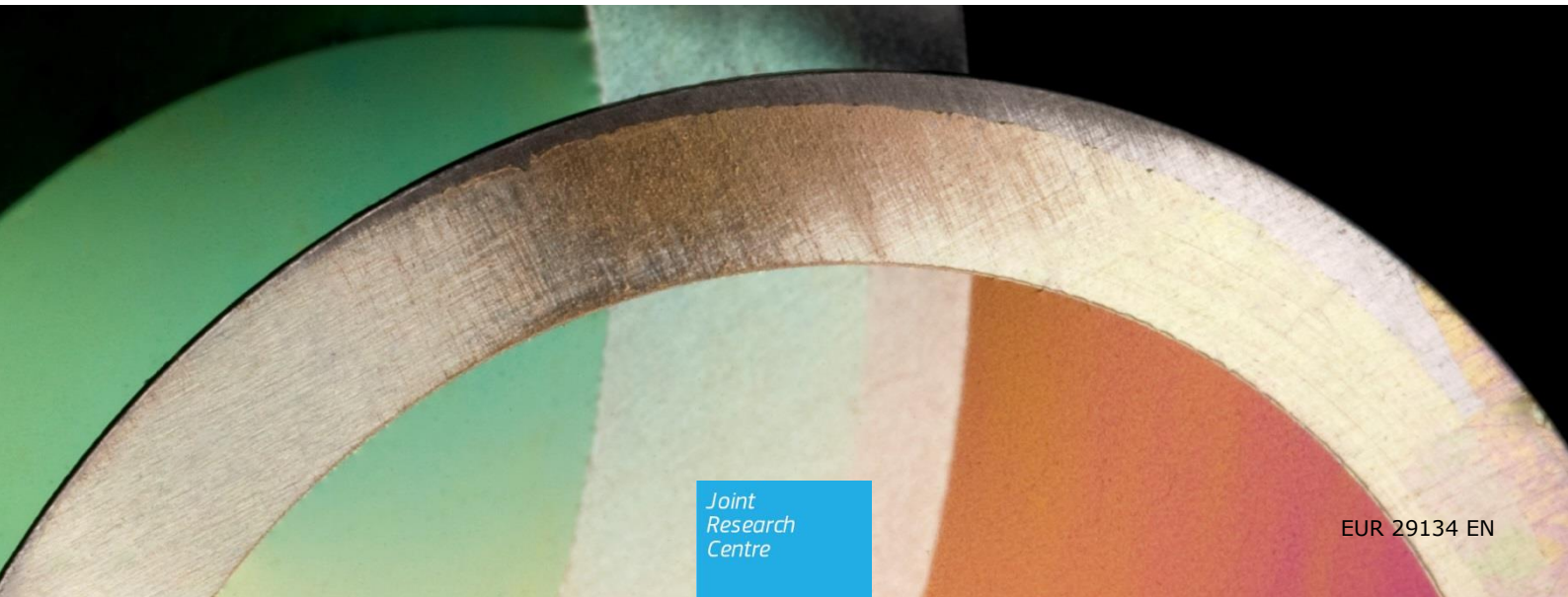

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Title:
The Startup Europe Ecosystem. Analysis of the Startup Europe projects and of their beneficiaries

Abstract:
In 2015 the European Commission (EC) DG CNECT launched the 2nd edition of the Startup Europe (SE) initiative under the Horizon 2020 EU Research and Innovation programme. This initiative coordinated the efforts of six distinct projects (Digistart, Welcome, ePlus, Startup Scaleup, Twist and Startup Europe Partnership) that connected just as many European entrepreneurial ecosystems. This report provides the theoretical framework to analyse the policy support to entrepreneurship and evidence on the nearly 700 startups participating in the SE projects. This exercise also helps to collect relevant insights about the effectiveness of the matching between the SE offerings and the needs of startups.

Contents

Foreword

This report is prepared in the context of the three-year research project on Research on Innovation, Start-up Europe and Standardisation (RISES), jointly launched in 2017 by JRC and DG CONNECT of the European Commission. The JRC provides evidence-based support to policies in the domain of digital innovation and start-ups. In particular:

- Innovation with the focus on maximising the innovation output of EC funded research projects, notably building on the Innovation Radar;
- Start-ups and scale-ups – providing support to Start-up Europe; and
- Standardisation and IPR policy aims under the Digital Single Market priorities.

This research builds on the work and expertise gathered within the EURIPIDIS project. It is part of the long-standing collaboration between the JRC and DG CONNECT in the domain of digital innovation and start-ups.

Executive summary

Successful startups generate large economic benefits and facilitating their growth is ascending the policy agenda. Policies that support startups aim to improve both the framework and the systemic conditions of the entrepreneurial ecosystems. The framework conditions improve directly with the institutional and infrastructural progress, while the systemic conditions cannot be so directly governed as they relate to networks, talent and leadership. A way to influence the latter conditions entails increasing the density of connections within and between entrepreneurial ecosystems. In light of this, in 2014 under the Horizon 2020 EU Research and Innovation programme the European Commission (EC) DG CNECT launched the Startup Europe (SE) initiative. The objective of SE was to exert a coordinated action in connecting the ecosystems of several projects and to enhance in this way the coherence of the entire European entrepreneurial ecosystem. This report investigates the approximately 700 startups that enrolled in the SE projects to benefit from the initiative. The analysis provides evidence about the effectiveness of the matching between the SE offerings and startups' needs. The study is carried out by focusing on startups' characteristics in terms of demographics, financial performance, use of VC funding, founders' gender and the internationalization of their activity.

The Startup Europe projects

The review of the six SE projects, i.e. *Digistart, Welcome, ePlus, Startup Scaleup, Twist and Startup Europe Partnership,* reveals considerable differences as for:

- The **target groups** encompassing academic and research communities, university students, web entrepreneurs as much as European startup champions,
- The **geographical reach** linking precise European cities in most of the projects with the exception of Startup Europe Partnership operating at the Pan-European level,
- The **value propositions** including the promotion of entrepreneurial role models among university students as much as the provision of training and consulting to network with investors, mentors, media, corporates and peer entrepreneurs.

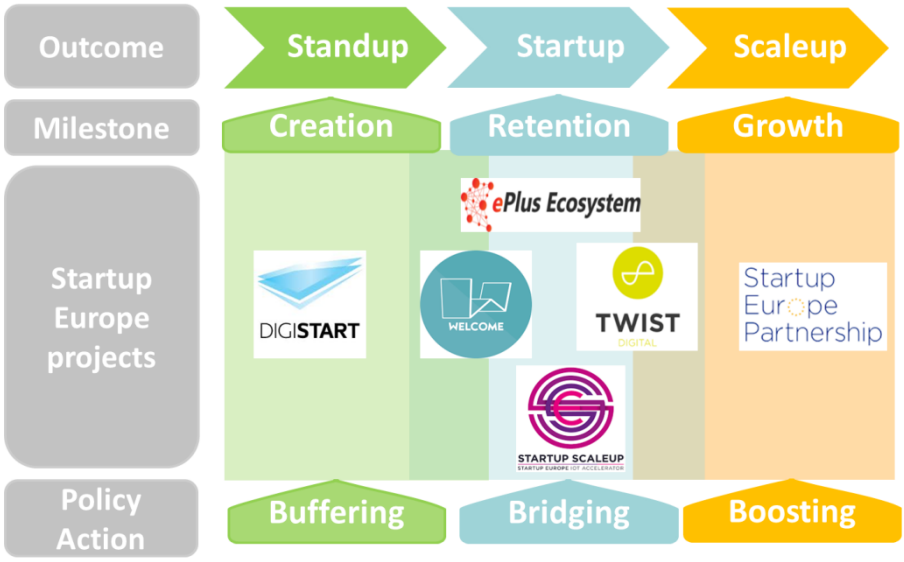
According to their objectives, the SE projects feed into the 3B framework of policy support corresponding to three entrepreneurial phases (see Figure 1):

- **Buffering**, the policy support to early stage entrepreneurial activities,
- **Bridging**, the policy support to link startups with external actors in the ecosystem,
- **Boosting**, the policy support to accelerate the growth of promising businesses.

Connecting the European entrepreneurial ecosystems

Each project of SE targeted a specific combination –called ecosystem- of European cities (e.g., the ecosystem of Digistart was Lisbon and Malmö). On the one hand it is reasonable to assume that these cities reflect their national framework conditions of entrepreneurship, particularly for scale up ventures. Indeed the SE projects assemble balanced ecosystems made of cities from both better and poorer national entrepreneurial conditions (Figure 5, Figure 6). On the other hand, once the information about SE beneficiaries is added to the adequacy of the national entrepreneurial conditions then both the similarities and the complementarities within the SE ecosystems become more apparent (Figure 28). For example, the SE findings about Digistart show that the companies from Lisbon and Malmö are alike concerning the average turnover, attitude towards VC funding and internationalisation, even though the national entrepreneurial context is more favourable in Sweden than in Portugal. On the front of diversities, on average, the companies from Malmö are older, bigger and with more female entrepreneurs while those from Lisbon have better profit margins.

Figure 1: The SE projects in the 3B framework of policy support to startups



Source: Startup Europe DG Connect; Autio and Ranniko (2016); Amezcua et al. (2013)

Beneficiaries of the Startup Europe projects

The picture of about 700 beneficiaries from the 6 SE projects reveals the following facts:

- There was a **strong geographical bias** related to startups' origin. The majority (some 40%) of beneficiaries are from the Iberian Peninsula, and startups from Italy and Germany represent altogether 20% (10% each) of the beneficiaries. At city level, Berlin, Lisbon, Madrid and Rome provide the majority of startups.
- The **digital startups** made more than 2/3 of the beneficiaries. These firms develop app-based solutions and online platform business model.
- The SE initiative attracted **early stage, small ventures**. More than 40% of the firms matched with Orbis were 1 and 2 years old and about 50% of the SE beneficiaries had 4 employees maximum.
- The SE beneficiaries suffer from **financial constraints**. Half of the firms matched with Orbis attained a turnover of 90K € and a profit margin of -5.8% at the most.
- Startups' **financial performance does not improve over time**. On the contrary, older startups have worse profit margins than younger ones.
- **1 out of 10 startups** received **Venture Capital** (VC) funding.
- The **early stage VC funding** accounts for 85% of the rounds and 50% of the VC-backed startups received **1M € or less**.
- The number of VC rounds indicates a **low continuity of the VC funding**. On average the startups could access the VC funds only went through 1 round.
- At country level, there is a **negative relation between the VC funding and the extent of SE**. Whereas Spanish startups accounted for over 25% of the total beneficiaries only 3% of them received VC funding. The opposite is true about Northern European and Scandinavian countries.
- **Many local startups but few international scaleups**. Fewer companies engaged with boosting projects and more than 90% of the startups matched with data on internet traffic receive at least 75% of their web visits from their home country. Portuguese, Italian and Spanish startups have the lowest share of international internet traffic while Swedish, British and Finish startups have the highest.

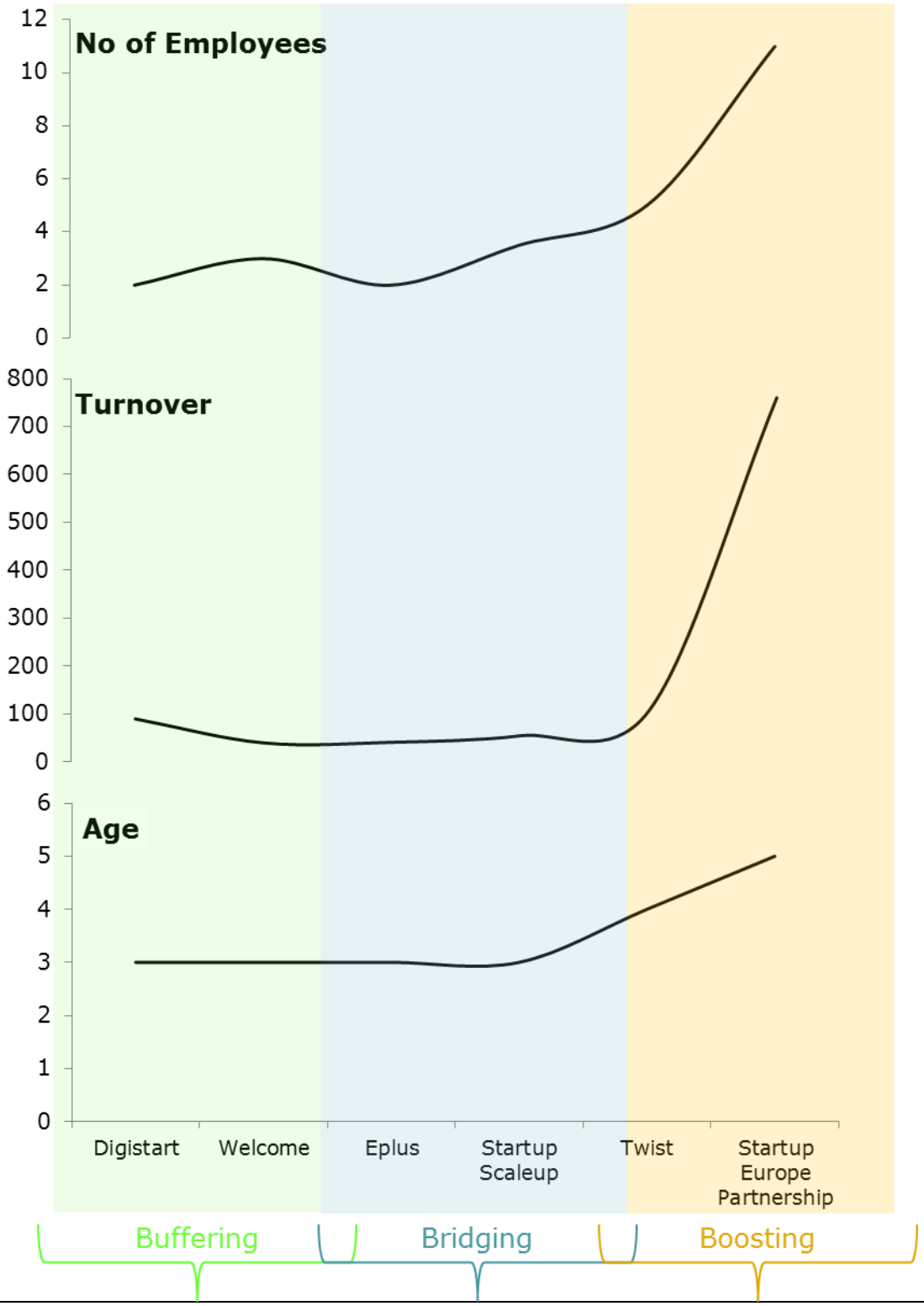
- **It's a Man's Man's Man's World**[1]. About the companies matched with available gender information, nearly 90% of the founders are men and this figure increases with the age and the development stage of the firms.

The accuracy of the matchmaking

According to the 3B framework of policy support to startups, the buffering projects aim to safeguard early-stage startups while the bridging and the boosting ones aim to enhance more advanced participants (see Figure 2). The typical SE beneficiary is an early stage and financially constrained venture of the digital domain from a country with limited VC investments. This fact per se highlights that the SE beneficiaries were particularly seeking for buffering and some bridging. However, the presence of participants within the projects of advanced bridging and boosting also witnesses the heterogeneity of the beneficiaries. This altogether suggests that the matchmaking was efficient vis-à-vis the widespread buffering needs of the beneficiaries, plus more customised support and fair offer of bridging and boosting was required and offered depending on startups' characteristics and development stage.

[1] "It's a Man's Man's Man's World" (1966) by James Brown and Betty Jean Newsome. https://en.wikipedia.org/wiki/It%27s_a_Man%27s_Man%27s_Man%27s_World

Figure 2: Three facts about the SE beneficiaries and projects in the 3B framework



Note: The graph shows the median values of beneficiaries as for number of employees (Figure 13), turnover (Figure 15) and age (Figure 12) across the SE projects.

Source: Startup Europe DG Connect; Autio and Ranniko (2016); Amezcua et al. (2013)

1 Introduction

In contrast to traditional entrepreneurial activities, like opening a restaurant or a grocery shop, a startup is a newly emerged and fast-growing business seeking to meet the marketplace by developing a business model around an innovative idea (Blank, 2010). The projects pursued by startups are very risky, so their survival rates are quite low. However, the startups that survive and succeed may have large economic impacts (Guzman & Stern, 2016). Due to this potential, startups are at the centre of policy interest. The key questions concern how public policy can improve the framework and systemic conditions of entrepreneurial ecosystems and facilitate startup creation and growth (Van Roy & Nepelski, 2016, 2017). The framework conditions include, among others, the institutions and the physical infrastructures, while the systemic conditions mostly relate to the presence of networks, leadership, finance, talent or new knowledge (Stam & Spigel, 2016). Thus, the framework conditions can be improved by straightforward measures like changes to the regulatory environment. Instead, the role of the public sector is more subtle concerning the improvement of the systemic conditions (Fuerlinger, Fandl, & Funke, 2015). Ways to improve the systemic conditions may be, for example, by increasing the density of connections or by facilitating the network of different actors in the entrepreneurial ecosystem. In light of this, in 2014 the European Commission DG CNECT launched the Startup Europe (SE) initiative (EC, 2014, 2016) with the objective to have coordinated endeavours to connect the European entrepreneurial clusters and to make the resulting ecosystem more coherent.

In order to cast some light on the outcomes of SE, this report looks at six projects launched under the SE initiative: *Digistart, Welcome, ePlus, Startup Scaleup, Twist and Startup Europe Partnership*. This document begins with linking the SE projects to corresponding measures from the 3B (*buffering, bridging and boosting*) framework of policy support at different entrepreneurial phases (*standup, startup and scaleup*). It continues with a description of the approximately 700 startups enrolled in the activities of the SE projects. The exploration of startups' demographics, financial performance, use of VC fuding, funder gender and the internationalization of their activity provides evidence on the effectiveness of the matching between the SE projects and startups' potential needs.

The remaining of the document is organised as follows: Section 2 introduces the 3B framework of policy support to startups. Section 3 places SE projects in the 3B framework of policy support to startups. Section 4 presents the geographic reach of SE projects. Section 5 analyses traits and characteristics of SE beneficiaries. Section 6 presents two particular cases among the SE beneficiaries. Section 7 elaborates on the main findings and section 7 draws the main conclusions.

2 3B framework of policy support to startups

Entrepreneurial activities are extensively affected by the context in which they take place. Hence, understanding the institutional, informational and socioeconomic factors – commonly denoted as framework conditions – is essential to collect relevant insights about the entrepreneurial processes of creation, survival and growth. The evolution and life of startups are marked by a series of outcomes and milestones. Each milestone requires different resources and capabilities, framework conditions are heterogeneously affecting the entrepreneurial milestones. Policy actions designed to improve the outcomes of the entrepreneurial process should be tailored to the distinct needs of entrepreneurs along the different milestones (Autio & Rannikko, 2016; Stam et al., 2012).

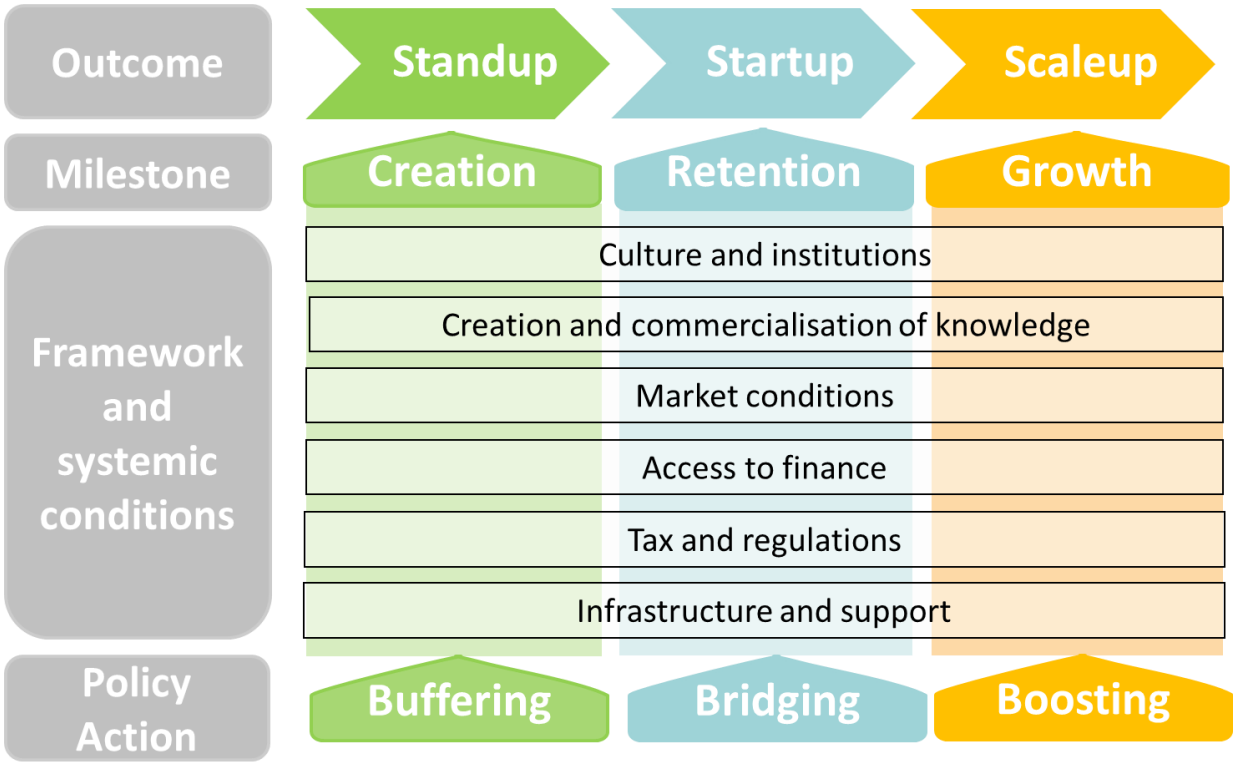
Figure 3 introduces the 3B (*buffering, bridging and boosting*) framework of policy support to startups along their development phases (*stand-up, start-up and scale-up*). The underlying assumption behind the 3B framework of policy support to startups is that every entrepreneurial journey originates from opportunity recognition. To pursue this opportunity, prospective entrepreneurs must take action to actually become entrepreneurs. Hence the first milestone is the **creation** of the start-up. At this stage, public support should aim to **buffering** startups from adverse external conditions. The rationale behind buffering lies in a resource-based perspective in which firms are resource-constrained entities. Buffering policies aim to create adequate conditions for the provision of vital resources in order to lower the firm dependency on external providers. The resource endowment is particularly salient at the creation of startups to ensure that they "*do not run out fuel*". Public support through buffering can include seed-stage access to financial capital, low-cost office space, tax deductions, and initiatives to lower the regulatory burden of establishing new firms, among others.

The second milestone that entrepreneurs need to achieve during their journey is the **retention** of the business venture leading to survival. Once achieved the retention milestone, buffering and sheltering barriers against the hostile external environment are no longer appropriate. At this stage, the **bridging** public support comes into play. In sharp contrast with buffering activities, these policy instruments promote and facilitate networking relationships with external partners. Bridging activities relate to the facilitation of inter-organizational networks, collaborations and the flow of knowledge and resources across organisations.

The third milestone is the **growth**. At this stage, the policy support relates to the **boosting** of firms' organizational capacities to scale-up the business. It could take the form of public support emphasizing growth motivation and encouraging firms to achieve milestones towards growth. The public support of this kind fits particularly the growth process of scale-up firms since it boosts them in the pursuit of both market expansion and economic growth.

This report employs the aforementioned 3B framework to analyse both the Startup Europe projects and the companies that joined these projects. This conceptual framework should enable to detect how well the projects were designed in order to effectively match the right target group of startups.

Figure 3: The 3B framework of policy support to startups



Source: Van Roy and Nepelski (2016) based on Autio and Ranniko (2016) and Amezcua et al. (2013)

3 The design of Startup Europe

3.1 Startup Europe in the 3B framework of policy support to startups

In 2014, under the Horizon 2020, the European Commission DG CNECT launched the Startup Europe initiative (EC, 2014, 2016). The objective of Startup Europe was to coordinate the EU work to connect clusters and ecosystems across Europe and to bring a higher coherence among the different EU initiatives. Until now, 14 projects were funded to build bridges between the startup players within European ecosystems. These projects worked directly with more than 700 startups, bringing them together with investors, accelerators, entrepreneurs, corporate networks, universities and the media. The current analysis looks six projects launched between 2015 and 2016: *Digistart, Welcome, ePlus, Startup Scaleup, Twist and Startup Europe Partnership*.

Table 1 presents an overview of the projects, their target groups, ecosystems in which they operated, and the activities they offered. One can observe a large variation along all these dimensions. With respect to the target group, while, for example, Digistart targeted academic and research community and university students, the focus of Startup Europe Partnership was on European startup champions. Also the geographical coverage is unique for each project. In general, they targeted at least two different local European ecosystems. For example, Digistart connected Lisbon and Malmö. Similar observation can be made with respect to the value propositions of the projects. They offered connecting startups with corporates for business advice or investments. In this way, startups could network with potential clients and successful entrepreneurs and establish mentorships and seminars and trainings. The projects did not provide any direct financial support to startups. Their main objective was to improve their knowledge and increase their connectivity in the European entrepreneurship ecosystem. Potential startups just signed up to the projects and were selected to participate.

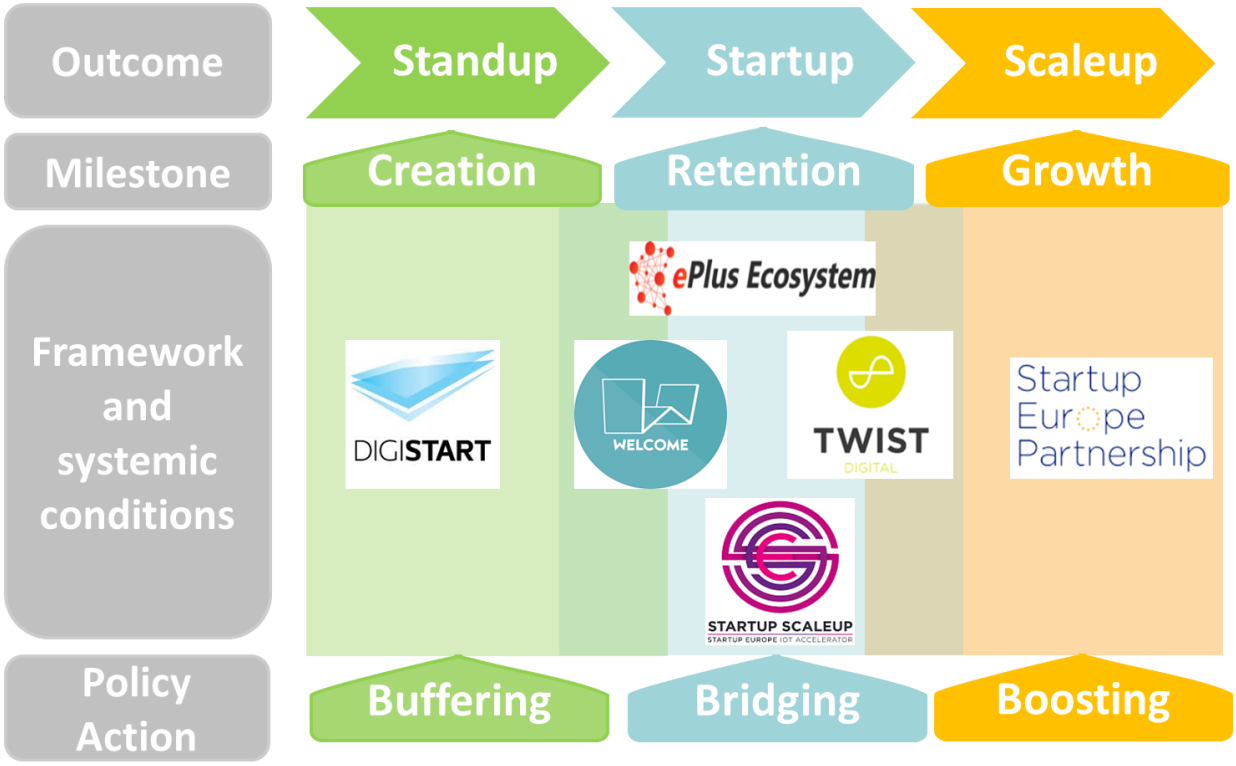
Table 1: Overview of Startup Europe Projects

Project	Target Group	Ecosystem	Value proposition
DIGISTART	Academic and research community University students Web entrepreneurs	Lisbon (PT) Malmö (SE)	Imbibe business skills to university students **Optimize** the **business models** and pricing decisions of digital startups
WELCOME	Tech startups	Berlin (DE) Dublin (IE) Milan (IT) Madrid (ES) Salamanca (ES)	Team up with **local partners** Engage with tech investors, mentors, media, corporates, entrepreneurs, etc. Link tech startups with **policy makers**
ePlus Ecosystem	Web entrepreneurs (both European businesses and potential entrepreneurs)	Lisbon (PT) Nice/Côte D'Azur (FR) Baden-Württemberg (DE)	**Liaise** entrepreneurs with European leading **early stage venture and crowdfunding networks** **Link** firms with active mentors in **national/regional programmes** **Match** companies with European science and **technology experts**
STARTUP SCALEUP STARTUP EUROPE IOT ACCELERATOR	Ambitious companies aiming to grow in the internet of things and services (IoTS)	Cartagena (ES) Zoetermeer (NL) Vilnius (LT) Dublin (IE)	**Tailored services** for IoTSs Supporting the **marketplace** of investors to encourage investment for growth
TWIST DIGITAL	Innovative medium and large companies Web entrepreneurs	Rome (IT) Lille (FR) Warsaw (PL) Stockholm (SE)	Connect with **right type of finance** Valorise the network to **access new markets**
Startup Europe Partnership	European startup champions Elite club of scaleups	Pan-European	Access to **top notch investors** and accelerators from all over Europe Provide internal conversation with the European Investment Fund and the European Commission

Source: Startup Europe DG Connect

Using the 3B framework of policy support to startups introduced in Section 2, Table 2 orders the Startup Europe projects into three groups. The classification is based on the descriptions of the initiatives and how their activities reflect one of the three types of policy support to startups: **Buffering**: targeting the early stage of entrepreneurial activity; **Bridging**: helping early startups to reach out to the external actors of the entrepreneurial ecosystem; **Boosting**: focusing on accelerating the growth of promising ventures. The resulting classification of the projects are summarised in Figure 4.

Figure 4: Startup Europe projects in the 3B framework of policy support to startups



Source: Startup Europe DG Connect; Autio and Ranniko (2016); Amezcua et al. (2013)

Table 2 classifies the SE projects according to the widespread conceptualisations of the possible policy actions (Autio and Ranniko, 2016) to support different entrepreneurial stages (Autio et al., 2017).

At the base of the classification there is the policy endeavours to stimulate the entrepreneurial potential to stand up and become manifest. At this stage, governments can provide resources aimed to buffer and protect new firms from the scarcity of internal resources and the dependency from external resources. At this entrepreneurial phase, the suitable support comes via training and consulting services, to stimulate the knowledge building of standing up companies, with infrastructural support related to low-cost office space, and with more financial help in the form of tax breaks and subsidies. According to the value proposition, Digistart is definitely the project mostly active in training budding champions.

The middle layer of Table 2 presents the intermediate policy support which addresses companies already survived, therefore retained, from the first round of natural selection. The policy support at this phase aims to create connections by bridging both among startups and between startups and relevant stakeholders. Key support at this stage relate first to the branding, which is about framing the business promise to the potential customers, as the brand is tightly connected with what companies are and how they are perceived by the market. Secondly, referral is about helping companies to increase their sales with a market strategy driving to positive experiences of customers and the consequent good reputation. Third, networking services aims to provide companies with events and ties to exchange ideas and team up together. Field building closely address connecting fragmented players within a given field of work to have a resulting industry which is better organised to deal effectively and efficiently with common issues and challenges. Finally, facilitating ties with business angels and venture capitalists helps companies towards concrete possibilities to expand their business and jump to the following entrepreneurial phase. According to their value propositions Welcome, Eplus, Startup Scaleup, and Twist provide a policy support that – in different ways – classifies as bridging.

The top entrepreneurial achievement is scaling up and it couples with a policy support that boosts firms' organisational capacities to help their growth. At this stage there is a strong and clear focus on checking that companies attain selective milestones consistently with a strong motivation to grow.

Table 2: The Startup Europe projects and their support to different entrepreneurial phases

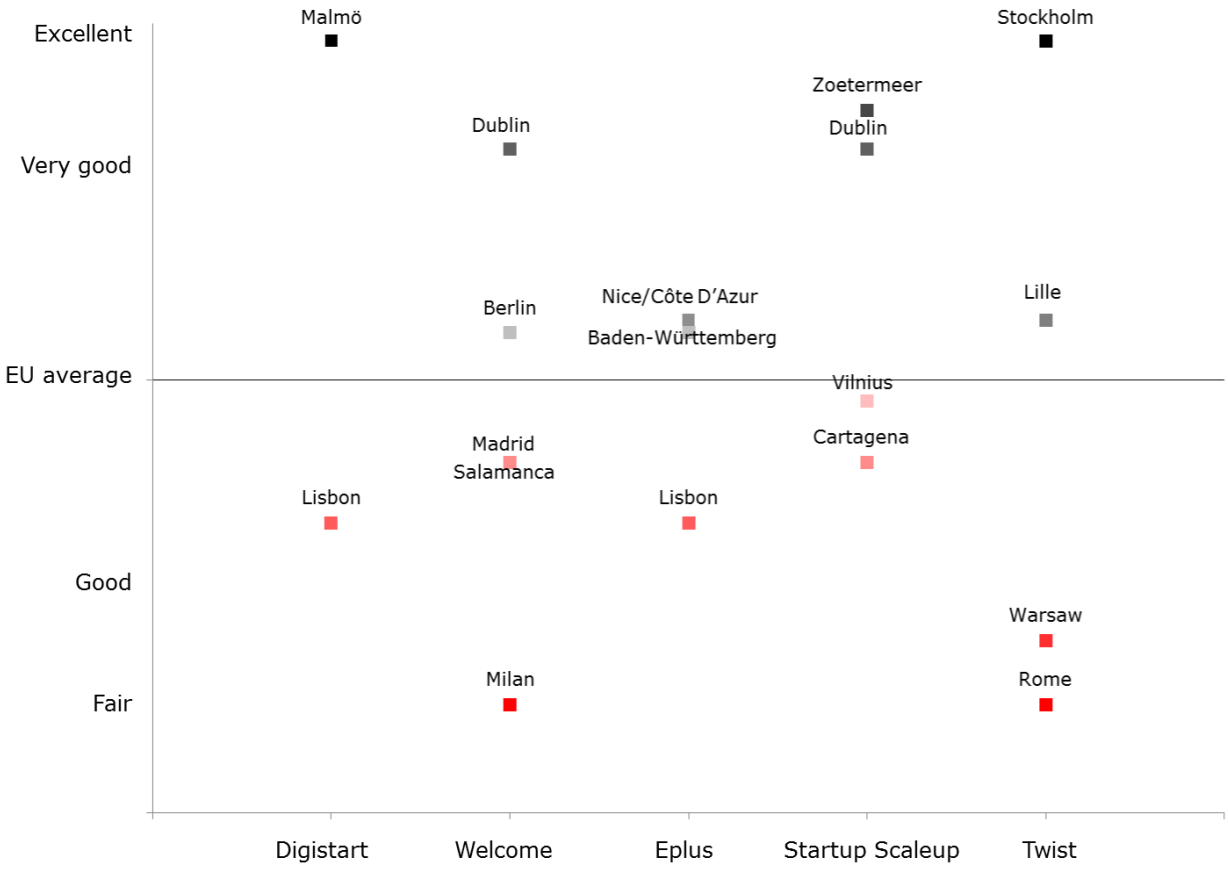
			Startup Europe project					
Start-up development phase	**Type of policy support**	**Theoretical policy support**	**Digistart**	**Welcome**	**Eplus**	**Startup Scaleup**	**Twist**	**Startup Europe Partnership**
Scale-up	Boosting	Highly selective initiatives based on strong growth motivation						√
		Progressive control on milestone achievement						
		Hands-on support on achieving milestones						
		Encouraging equity funding						√
		Promote the exchange of experiential insights for rapid growth						√
Start-up	Bridging	Branding						
		Referral			√		√	√
		Networking services		√	√		√	√
		Field building		√	√	√	√	
		Tie facilitation with business angels and venture capitalists		√	√		√	√
Stand-up	Buffering	Training	√					
		Consulting services	√					
		Low-cost office space						
		Tax breaks						
		Financial subsidies						

Source: Startup Europe DG Connect; Autio and Ranniko (2016); Amezcua et al. (2013)

3.2 Framework conditions for firms' growth in the SE ecosystems

Figure 5 displays the quality of the contextual framework conditions for scaleups that the SE cities enjoy in their respective countries. This information is from the "Assessment of Framework Conditions for the Creation and Growth of Firms in Europe" (2016) and it groups together countries with excellent, very good, good or fair conditions. By each SE project the figure plots the cities identified as the relevant ecosystem of the project. It is interesting to note that cities with worst and best framework conditions for scaleups are in contact via the SE projects. Finally each SE ecosystem results in an overall balanced match with both weaker and stronger spots bridged together. Scandinavian and Dutch national contexts offer to companies the top framework conditions to scale up and are joined with European countries (and cities) with more difficulties. This is the case of Digistart, Startup Scaleup and Twist. The very good conditions of Ireland, France and Germany are brought about instead by Welcome, Eplus, and Startup Scaleup.

Figure 5: National framework conditions for scaleups in the SE ecosystems



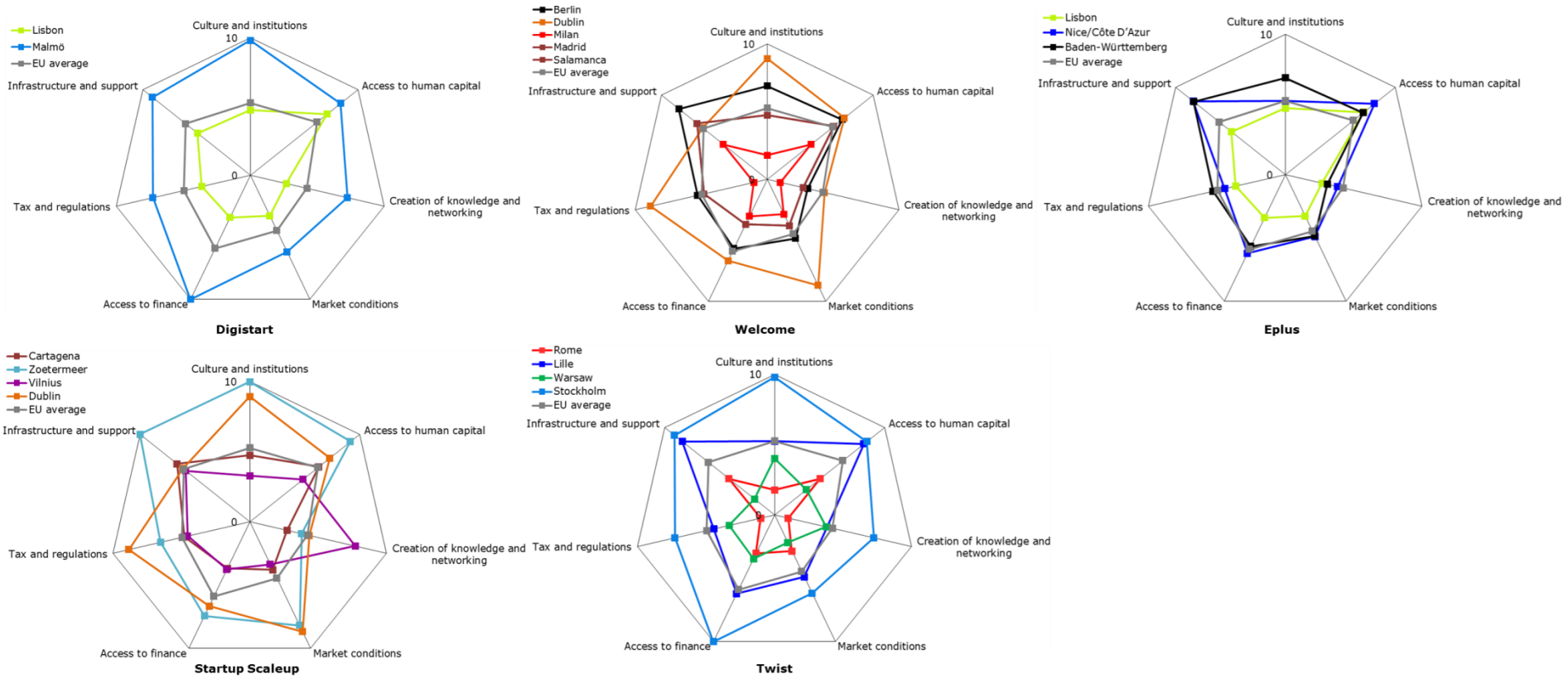
Note: The graph shows the national overall framework conditions for scaleups concerning the European cities of the SE projects' ecosystems.

Source: Startup Europe DG Connect; Van Roy and Daniel Nepelski (2016)

Figure 6 shows how the national contexts of the selected SE ecosystems rank on the key seven framework conditions of: 1. Culture and institutions; 2. Access to human capital; 3. Creation of knowledge and networking; 4. Market conditions; 5. Access to finance; 6. Tax and regulations; 7. Infrastructure and support. This figure digs into the complexity concealed by the general level of framework conditions at national levels and may display which are the factors acting as common or complementary grounds for the ecosystems. Within Digistart, for example, even if Malmö is clearly ahead of Lisbon in all the dimensions still Lisbon enjoys the good pre-requisites offered by Portugal especially in terms of a good access to human capital. This may certainly be an enabler of the successfulness of the exchanges between these two ecosystems. Welcome looks quite balanced with national

contexts offering the cities similar framework conditions for scaleups, with Dublin in Ireland and Milan in Italy being the two upper and lower poles. Instead, the project Eplus puts together cities form countries that may have possible complementarities, with Lisbon possibly enjoining very good access to human capital while Nice/Côte D'Azur and Baden-Württemberg may enjoy better infrastructure and support at national levels. A similar case could be as well the one of Startup Scaleup that ties Vilnius from a national context with high creation of knowledge and networking with the outstanding Irish condition as for tax and regulations and the Dutch infrastructure and access to human capital. In the ecosystem of Startup Scaleup the national background of Cartagena is relatively stronger in terms of infrastructure and human capital than in the other dimensions. Finally, Twist merges the Swedish excellence with Italian, French and Polish contexts where the heterogeneity across the framework conditions may turn into valuable complementarities.

Figure 6: Dimensions of the contextual framework conditions for scaleups in the SE ecosystems

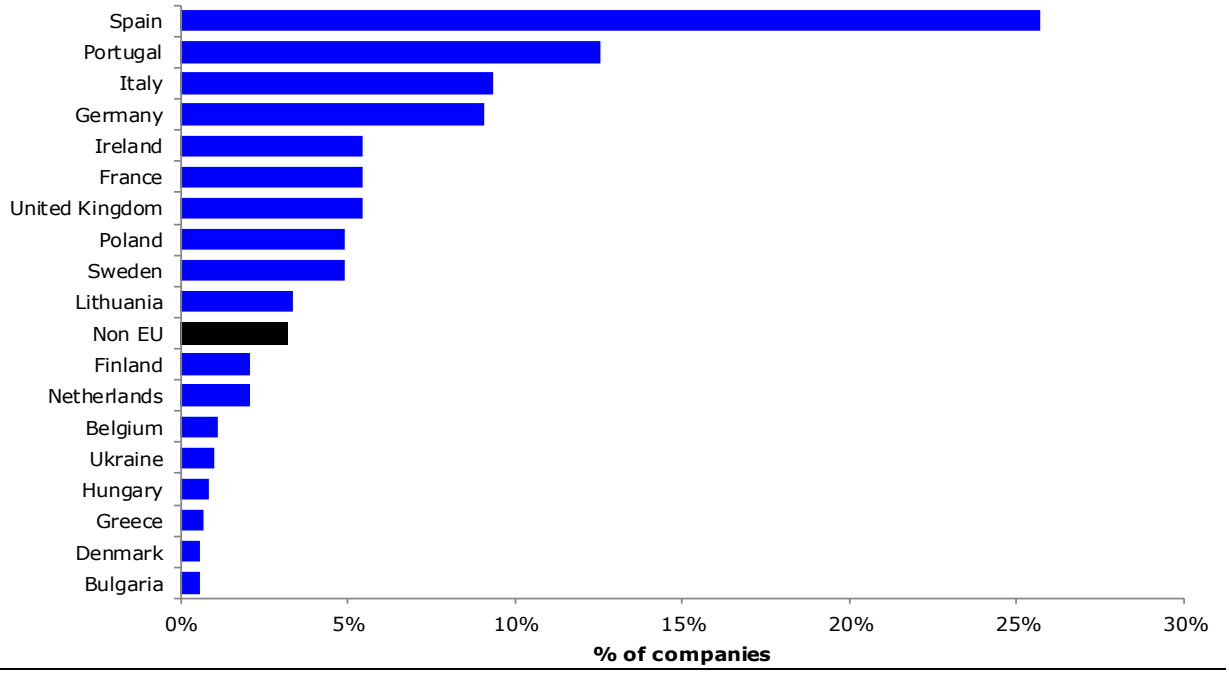


Note: The graph shows the national specific framework conditions for scaleups concerning the European cities of the SE projects' ecosystems.
Source: Startup Europe DG Connect; Van Roy and Daniel Nepelski (2016)

4 The reach of Startup Europe

Figure 7 shows the distribution of SE beneficiaries by country of origin. The beneficiaries -716 firms in total and 681 unique firms in at least one project- of the six projects largely (almost 40%) come from the Iberian Peninsula. Then, Italy and Germany host some 10% of the beneficiaries each. A small share (3.5%) of these firms is based outside the EU.

Figure 7: The distribution of the SE beneficiaries by country of origin

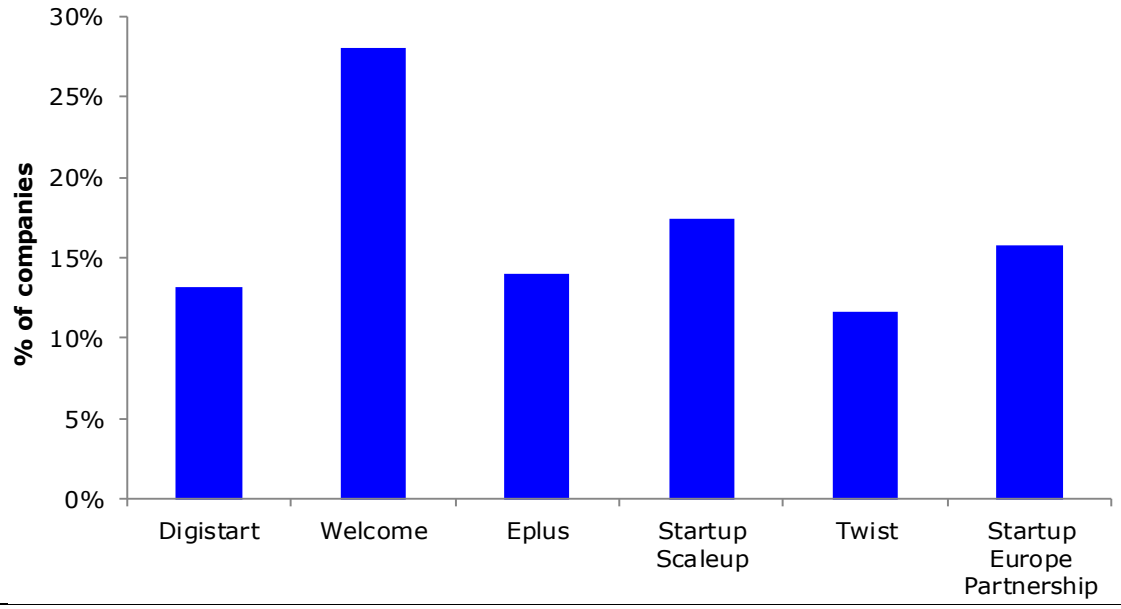


Note: This graph includes only countries with at least 1% of companies in the SE projects with respect to the total.

Source: Startup Europe DG Connect (n=716)

Figure 8 presents a perspective of the beneficiaries by project. The bars indicate the percentage of companies attracted by each project vis-à-vis the whole sample of Startup Europe (SE). The most popular projects are those in support of a broad entrepreneurial potential, while less firms enrolled into the more selective Startup Europe Partnership where encountering scaleups should be more probable.

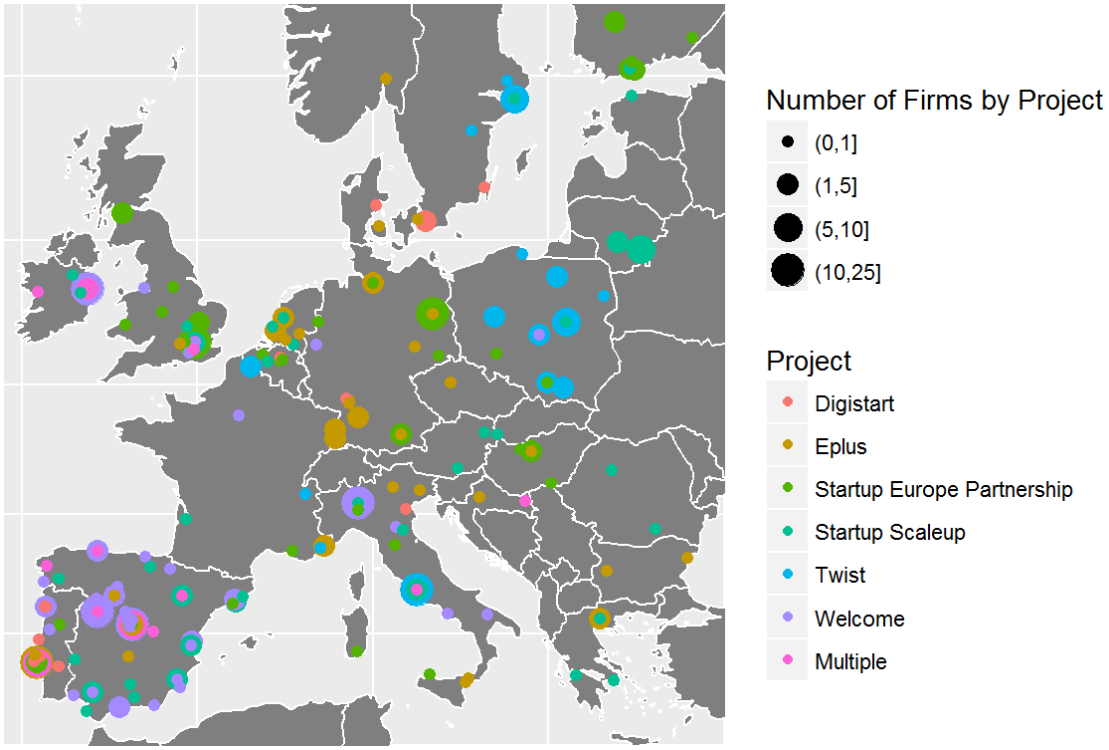
Figure 8: The distribution of the SE beneficiaries by projects



Source: Startup Europe DG Connect (n=716)

Figure 9 shows the geography of the different projects and the participation they attain at city level. In the majority of cases the cities that gather the most of startups are the ones directly identified by the SE ecosystems (Table 1). However companies from several other cities responded to the SE calling and enrolled in the projects.

Figure 9: The distribution of SE beneficiaries by city of origin and project



Note: For each project the map shows the cities where the startups are based. Each city gets a point by project and location, the size of points indicates the number of firms. Different projects are in different colors. Size has four categories (i.e. 1 firm, 2-5 firms, 6-10 firms and 10-25 firms). The information about cities of origin is available about 72% of the startups.

Source: Startup Europe DG Connect, Orbis (n=495)

5 Traits of the Startup Europe beneficiaries

This chapter outlines the traits of the Startup Europe beneficiaries in order to provide similar policy initiatives with informative insights. The characteristics of the beneficiaries are found out by means of additional data on the following features:

1. Sector of activity,
2. Age,
3. Size,
4. Financial performance,
5. Track of Venture Capital (VC) funding,
6. Internationalisation of activity,
7. Gender of startups' funders.

The data about the sector of activity, age, size, and financial performance of companies are from Orbis - Bureau van Dijk. Data about size and financial performance relate to the last available year.

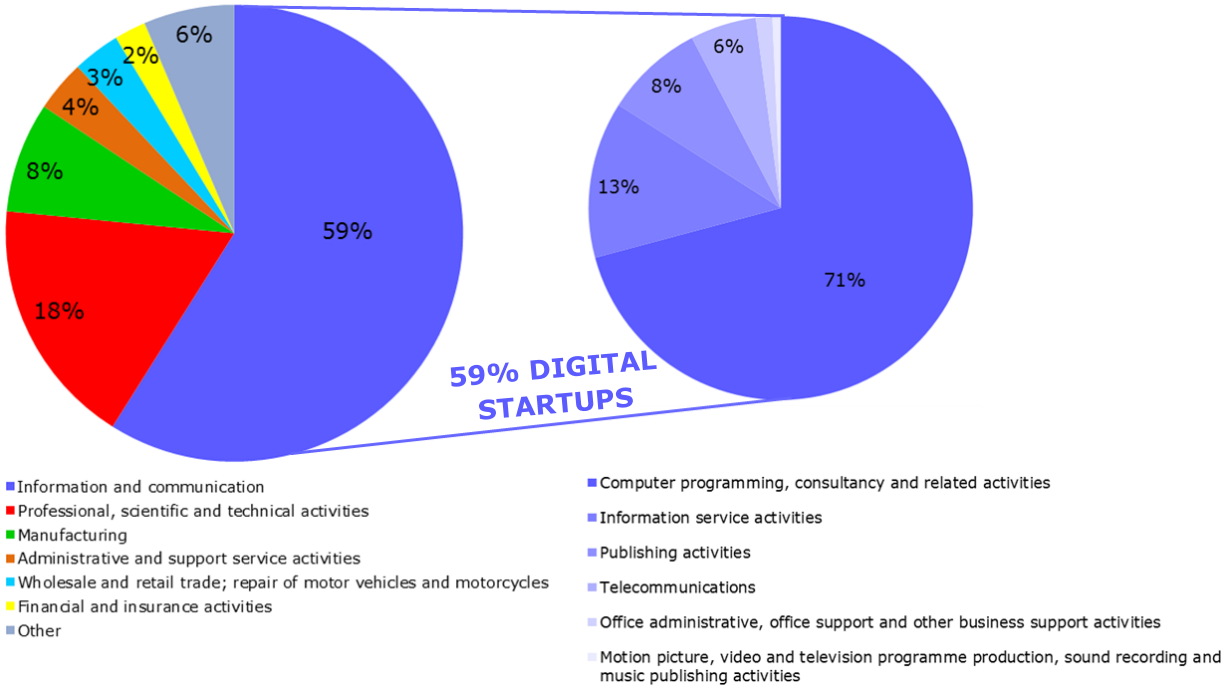
Data of VC funding, internationalisation and gender are instead from Venture Source - Dow Jones, Alexa, and Namsor respectively.

Finally, the number of observations (n) underneath the following figures indicates the startups that were actually matched from the 681 of the SE sample.

5.1 Sector of activity

The information on the sectors (as per the NACE Rev. 2 classification) gives an indication of the businesses that are more in search of support from policy (Figure 10). On the other hand, the SE projects are particularly tailored to technology-based entrepreneurs. All things considered it is not a surprise that the SE startups are predominately (almost 60% of them) from the broad sector of "Information and communication" (IC). Also companies from the broad manufacturing sector (8%) are mostly active in the "Manufacturing of computer, electronic and optical products". The second big class (18%) of entrepreneurial endeavours is the "Professional, scientific and technical activities".

Figure 10: The distribution of the SE beneficiaries across the sectors of the economy



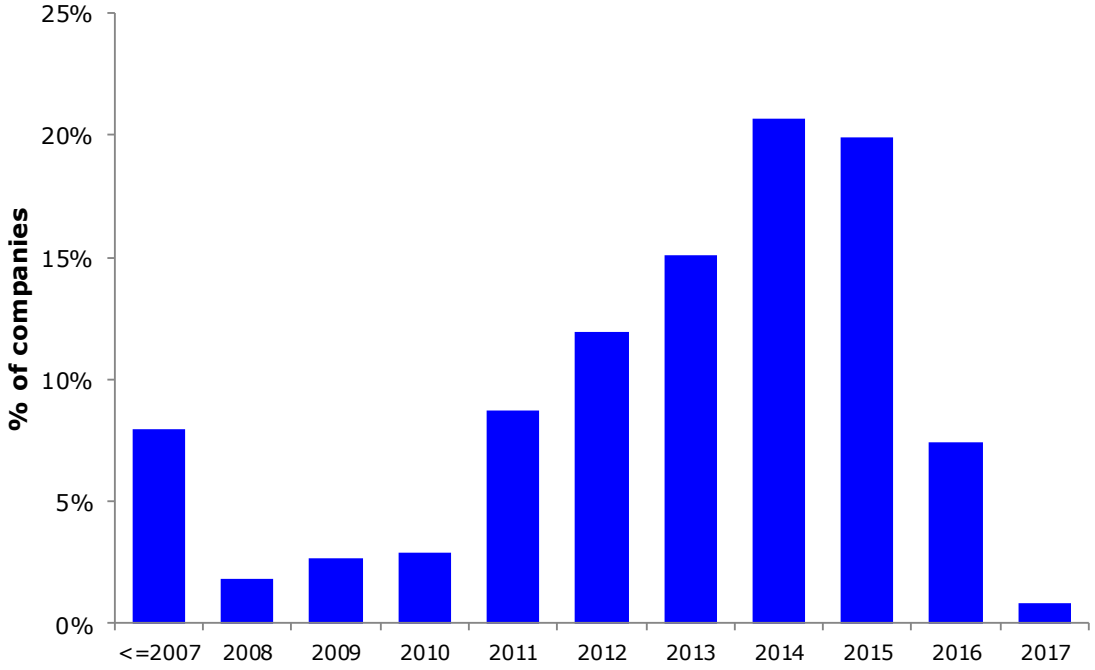
Note: The graph shows the percentage of startups by the sectors of the economy (NACE Rev. 2).
Source: Orbis, Bureau van Dijk (n=358)

71% of the IC beneficiaries operate in the sector of "Computer programming, consultancy and related activities". In many cases these firms develop app-based solutions (e.g., booking and sharing platforms, devices of internet-of-things) and to digital health. By means of example, 149 firms from the SE sample mention the word "app" in the description they provided of themselves while 19 firms indicate the word "IoT".

5.2 Age

Figure 11 offers an insight into the age – and possibly the development stage – of the SE beneficiaries. The majority (41%) of firms were founded between 2014 and 2015 and were respectively 2 and 1 years old during the SE edition in 2016. The age is computed with respect to 2016 as "2016 – year of establishment".

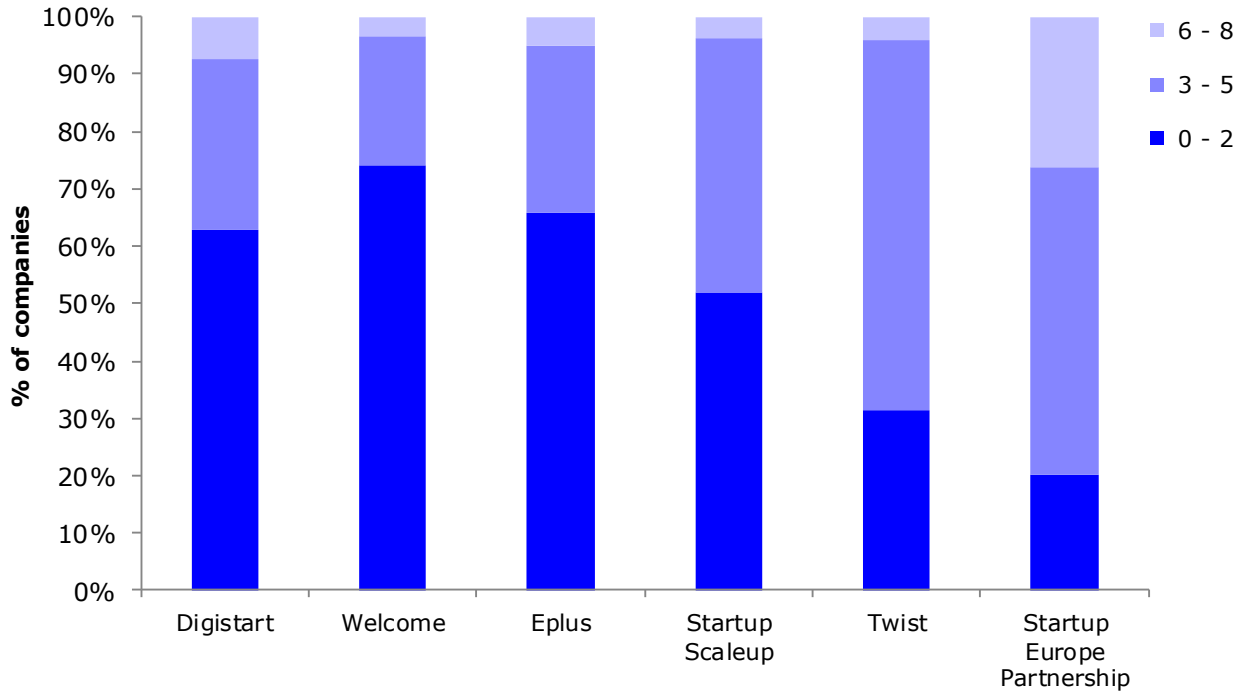
Figure 11: The SE beneficiaries by their year of establishment



Note: The graph shows the shares of startups by year of establishment.
Source: Orbis, Bureau van Dijk (n=366)

Figure 12 shows the shares of companies from different age groups across the SE projects. The share of very young firms (i.e. between 0 and 2 years old) decreases from the projects that focus more on the buffering to the projects increasingly meant for boosting. The Startup Europe Partnership is definitely the project with the highest share (almost 20%) of older firms. Older firms range between 2% and 3% in the other projects. In line with the expectation that the development stage, as grasped by the age of beneficiaries, entails different companies' needs of support. Finally, a match seems to appear between companies' needs and the different support provided by the SE projects.

Figure 12: The age of SE beneficiaries by project

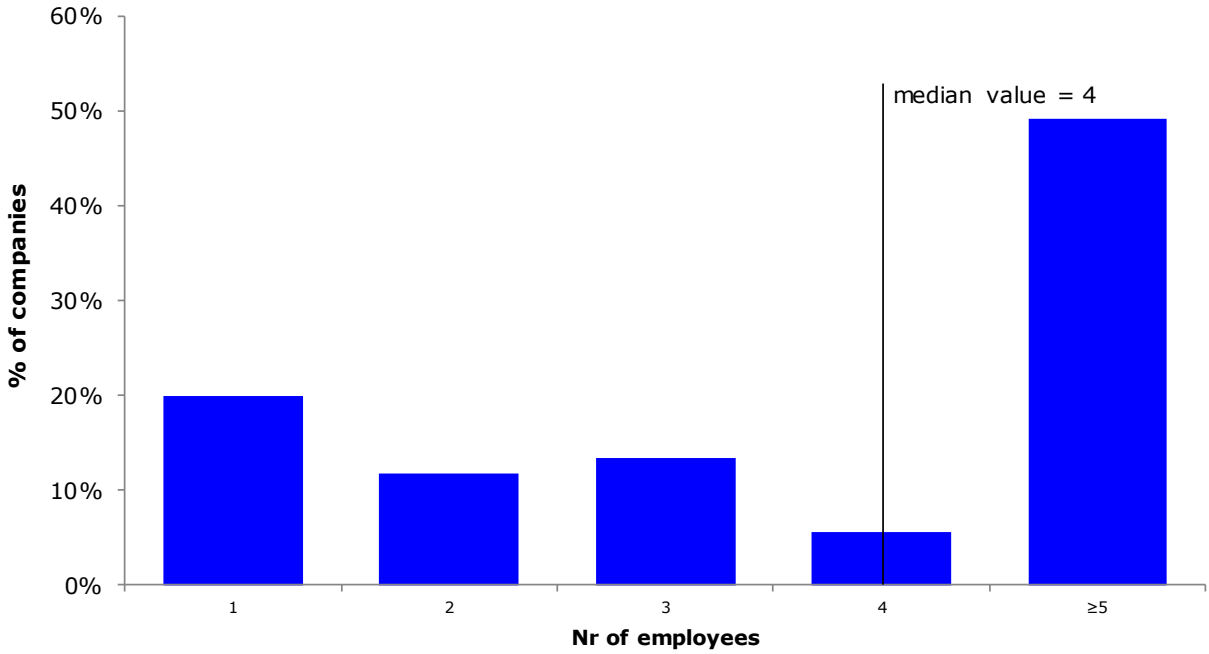


Note: The graph shows the percentage of startups from different age groups (0-2 years old; 3-5 years old; 6-8 years old) by project. The age is computed as "2016 – year of establishment".
Source: Orbis, Bureau van Dijk (n=366)

5.3 Size

Following on the characteristics of SE beneficiaries, Figure 13 shows the entire distribution of the startups along the number of employees. Almost 20% of companies are 1-employee firms while overall half of the companies have between 1 and 4 employees.

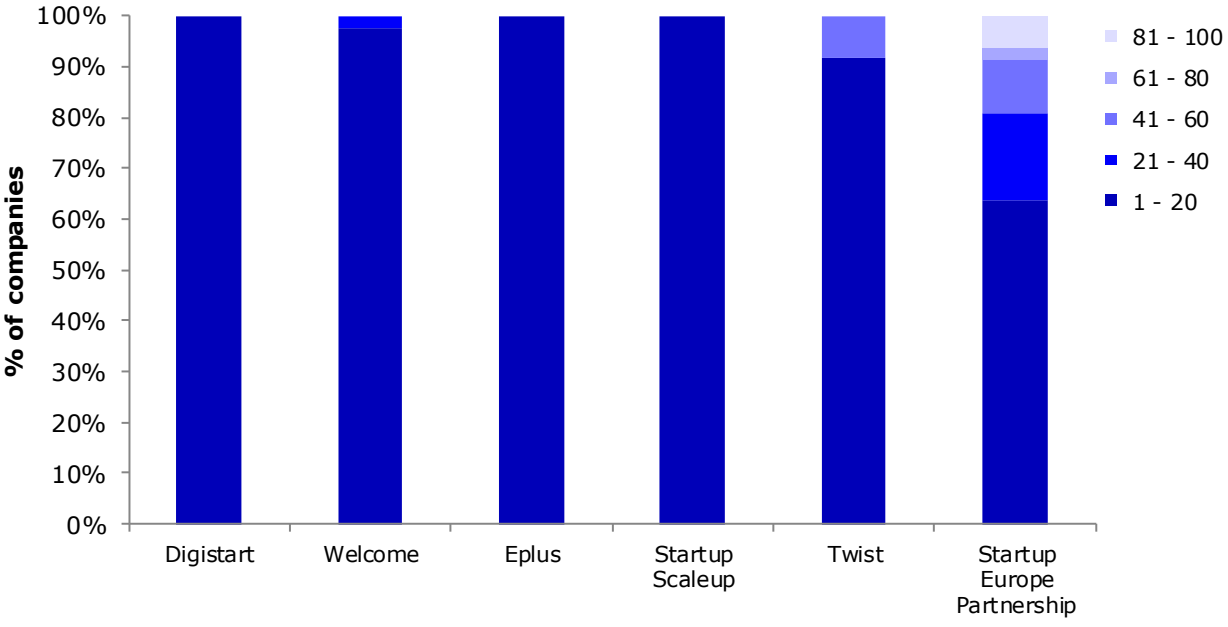
Figure 13: The share of SE beneficiaries by the number of employees



Note: The graph shows the numbers and shares of startups by given numbers of employees.
Source: Orbis, Bureau van Dijk (n=195)

Figure 14 shows the share of small (i.e. between 1 and 20 employees) and bigger companies by the SE project. Similarly to age, smaller firms gather more into the projects with a focus on buffering and bridging while bigger ones enter the projects for boosting.

Figure 14: The employees of SE beneficiaries by project

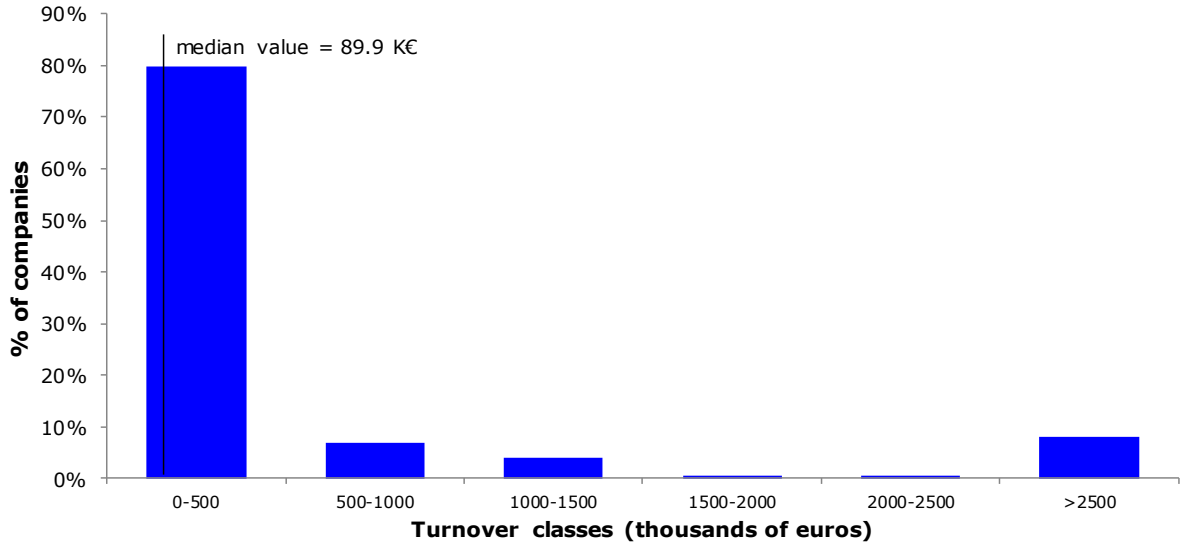


Note: The graph shows the percentage of startups with different numbers of employees (1-20 employees; 21-40 employees; 41-60 employees; 61-80 employees; 81-100 employees) by project.
Source: Orbis, Bureau van Dijk (n=195)

5.4 Financial performance

Figure 15 shows firms' turnover to look at their sales' successfulness. Half of these firms attain a turnover of almost 90,000 EUR. Similarly to employment, also the distribution of turnover is skewed since the participants in the SE projects are mostly firms with low sales revenues.

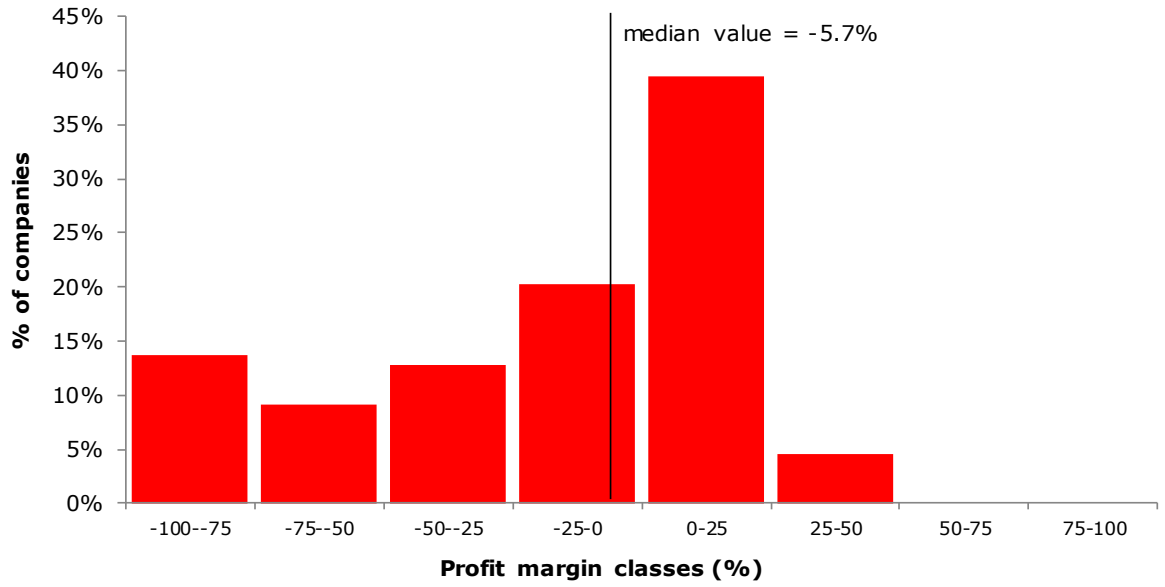
Figure 15: The share of SE beneficiaries by class of turnover (thousands of euros)



Note: The graph shows the shares of startups by given classes of turnover in thousands of euros. The classes of turnover are: 0-500, 500-1000; 1000-1500; 1500-2000; 2000-2500; >2500.
Source: Orbis, Bureau van Dijk (n=173)

Figure 16 adds the information on the profit margin to complement the figure on turnover. More than a half of SE beneficiaries operate at a loss with half them with a profit margin between -100% and -5.7%. 40% of companies have a positive profit margin between 0 and 25%, while a small share (5%) have a profit margin ranging between 25% and 50%.

Figure 16: The share of SE beneficiaries by class of profit margin (%)

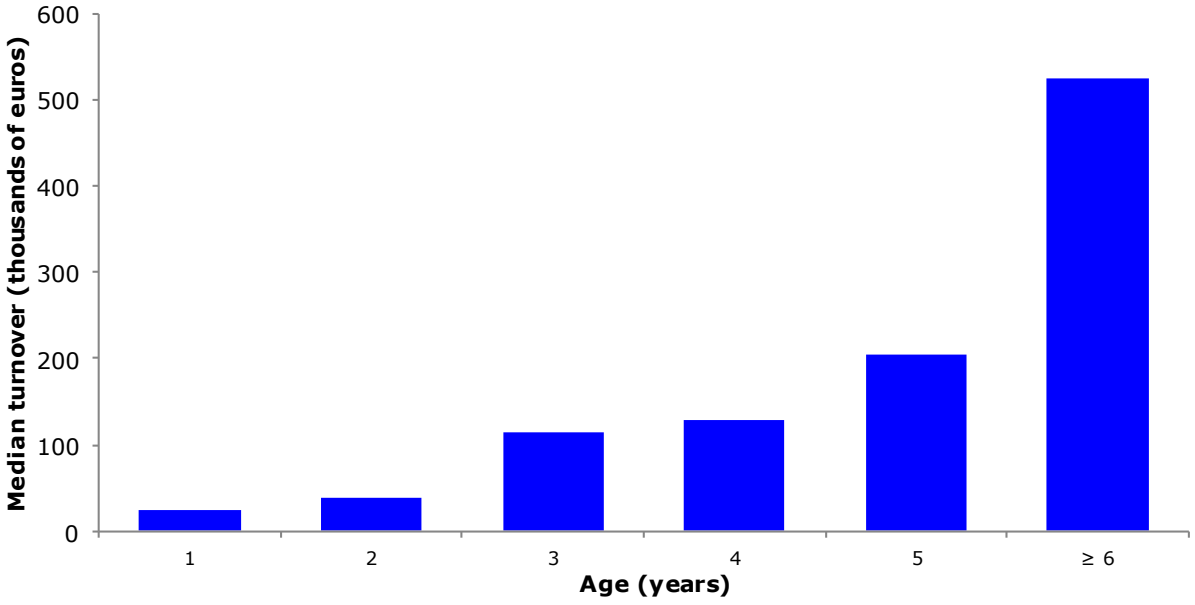


Note: The graph shows the shares of startups by given classes of profit margin (%). The classes of profit margin are: -100- -75; -75- -50; -50- -25; -25-0; 0-25; 25-50.

Source: Orbis, Bureau van Dijk (n=109)

Figure 17 presents the relationship between age and turnover. Firms that older than 6 years (about 15% of the SE participants), display a quite higher median turnover than the other participants. So among the 1 year old companies the median turnover is around 25 thousands of euros, while among companies of more than 6 years old the median turnover reaches above 525 thousand euros.

Figure 17: The median turnover by age of the SE beneficiaries



Note: The graph shows the median turnover (thousands of euros) by the age (years) of companies. The age is computed as "2016 – year of establishment".

Source: Orbis, Bureau van Dijk (n=173)

Figure 18 adds information about the median profit margin by firms' age showing that in the vast majority of cases the SE firms - particularly the oldest ones - operate at a loss.

Figure 18: The median profit margin by age of the SE beneficiaries

Note: The graph shows the median profit margin (%) by the age (years) of companies. The age is computed as "2016 – year of establishment".

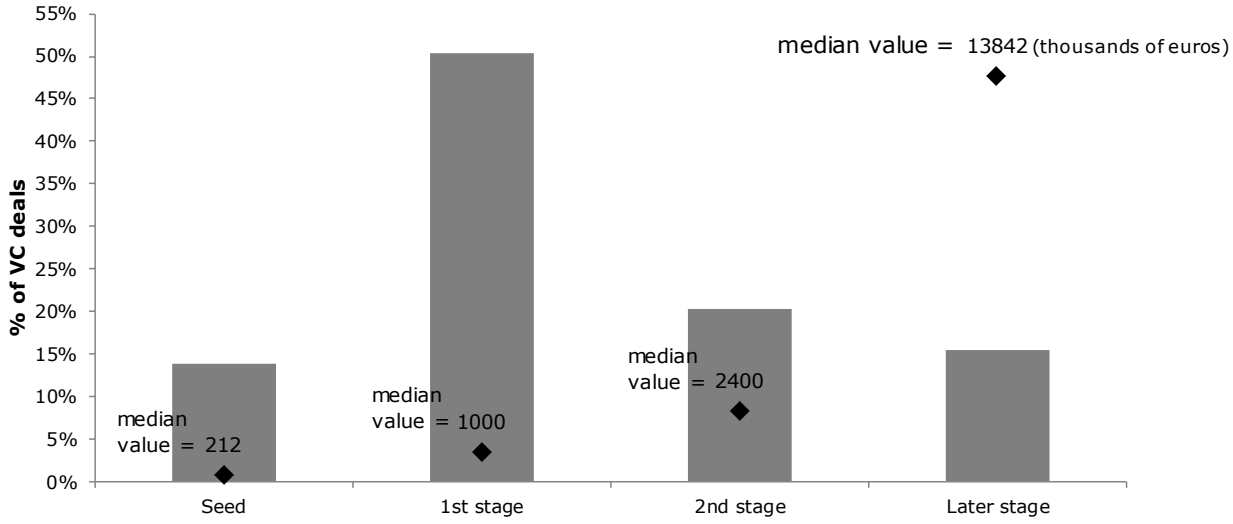
Source: Orbis, Bureau van Dijk (n=109)

5.5 Track of Venture Capital funding

Scaling up a business necessitates the support of riskier equity therefore this section explores how the SE beneficiaries performed about attracting VC investments. In total 73 companies from the SE initiative benefitted from VC deals, as documented by the Venture Source of Dow Jones and the deals obtained by these firms add up to 123.

Figure 19 shows the shares of deals by VC stage revealing that that the majority of the VC investments are early-stage, either seed or first round investments (64%). At the same time the median values of the amounts increases with the number of rounds, so the median amount of the seeds investment is around 212 thousand of euros, while the median amount of the later stage investments is almost 14000 thousands of euros.

Figure 19: The share of VC deals by stage

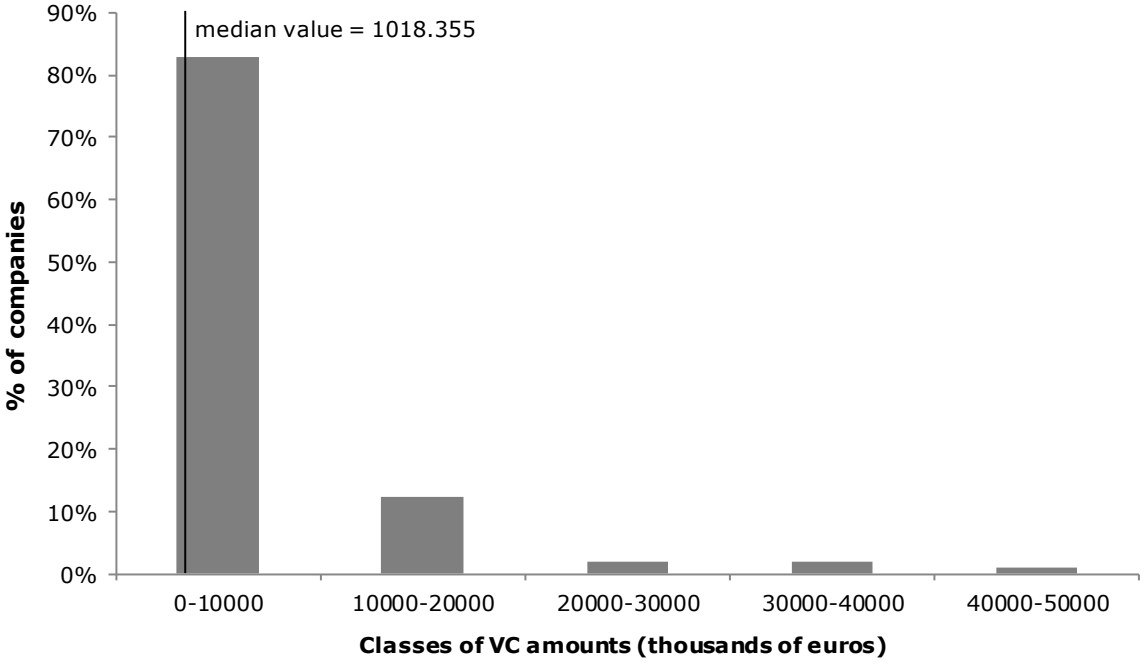


Note: The graph represents the share (%) of the VC investment deals by investment stages and the median value (in thousands of euros, represented with black diamonds) of the amounts by VC stage.

Source: Venture Source, Dow Jones (n=123)

Figure 20 shows the share of companies by amounts of VC-deals, approximately half of the companies got up to 1 million euros. The distribution is skewed towards investments of smaller scale with the highest deal of 42 million EUR. The observations decrease from Figure 19 to Figure 20 because amounts are not always disclosed by the Venture Source.

Figure 20: The share of SE beneficiaries by class of VC amounts



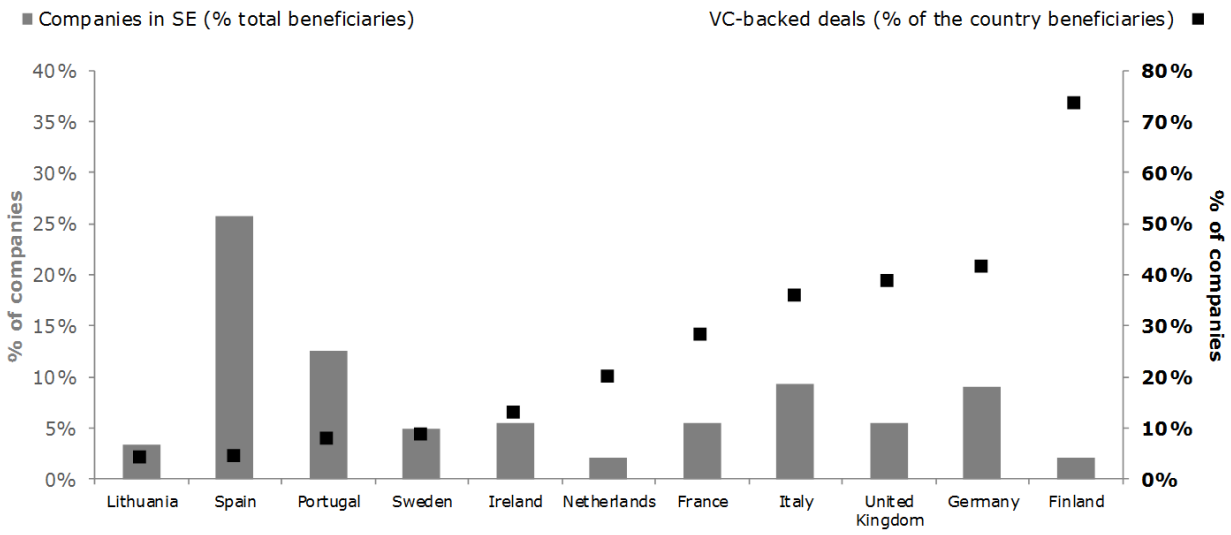
Note: The graph shows the share (%) of startups by given amounts of VC-deals (thousand EUR).

Source: Venture Source, Dow Jones (n=106)

Figure 21 shows two pieces of information: the shares of SE participants by country and the shares of VC-backed deals by country. In particular the figure shows the share of VC backed deals as a percentage of the participants by country. The lowest shares of VC deals appear in Lithuania, Spain, and Portugal. On the other hand, companies from

Finland, Germany and the United Kingdom obtained the highest shares of VC deals especially in comparison with the shares of SE beneficiaries from these countries.

Figure 21: The share of VC-backed companies among the SE beneficiaries by country

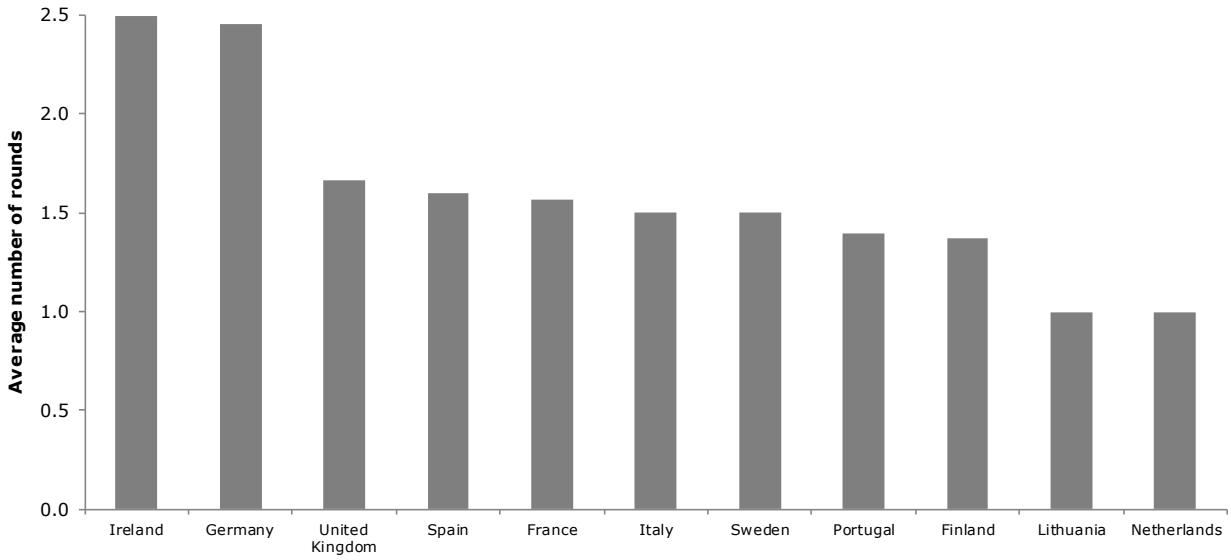


Note: The graph shows the share (%) of companies that participated in SE by country (right axis), and the VC-backed companies as a share of the participating ones (left axis). The graph includes only countries with at least 10 companies in SE.

Source: Startup Europe DG Connect (n=647); Venture Source, Dow Jones (n=115)

Figure 22 displays the average number of rounds by country. This graph shows the divide between Ireland, Germany and the United Kingdom where an average start-up may attain between 3 and 2 round of VC deals vis-à-vis the other countries where on average a start-up at the most go through only 1 round.

Figure 22: The average number of VC rounds of the SE beneficiaries by country



Note: The graph shows the average number of rounds by country. The graph includes only countries with at least 10 companies in SE.

Source: Venture Source, Dow Jones (n=115)

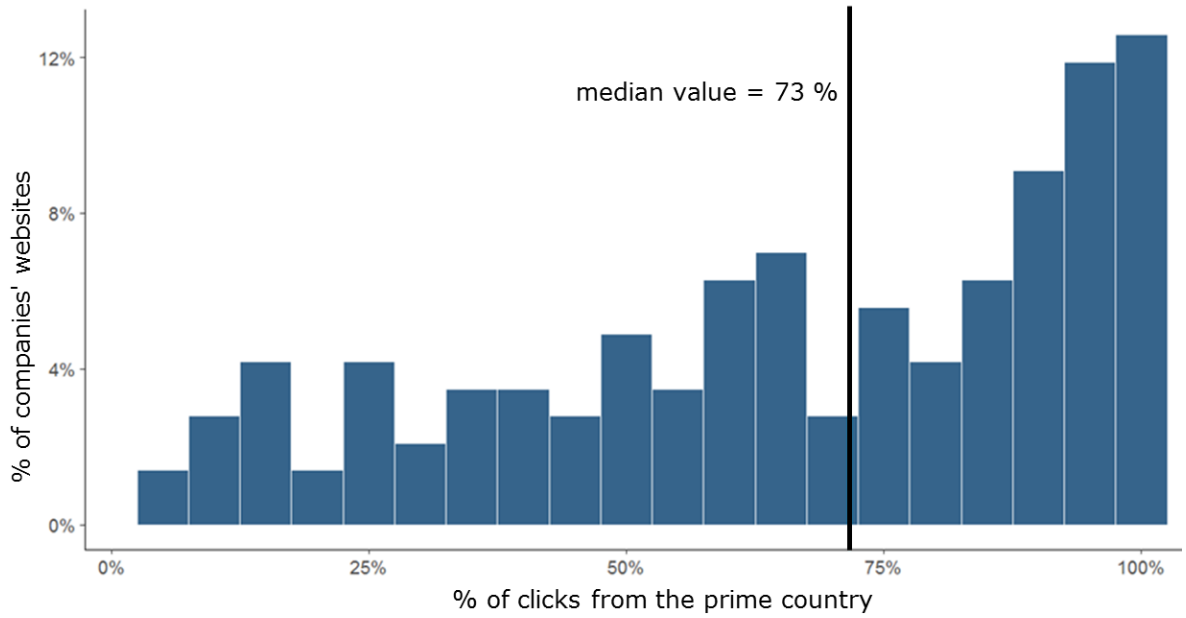
According to Nepelski et al. (2016) the UK, Germany and France are the countries with the highest shares of European VC-backed companies. The same study also shows that the average continuity of VC financing is 1.6 rounds per VC-backed company, while the Swedish firms are the most likely to receive subsequent rounds of financing, whereas Lithuanian ones are the least likely.

5.6 Internationalisation of the websites and internet traffic

Since the SE projects mostly attract digital entrepreneurs then a suitable measure of their internationalisation is the origin of the web visits (i.e. the internet "clicks") that the start-ups receive on their websites. The origin of the web visits certainly proxies the origin of the public of the SE beneficiaries, and it may proxy the potential of startups to scale up and growth.

Figure 23 shows the percentage of the web visits that companies' websites receive from their prime visitor (i.e. the country where the web visits mostly originate from). The distribution is rightly skewed since half of the companies receive up to 73% of the visits from one main country while the other half receive more than 73% of their web visits from the prime visiting country. The distribution culminates with a bulk of 13% among the SE beneficiaries that receive 100% of visits from their sole visiting country, meaning no international reach at all. On the other extreme, at the beginning of the distribution, only 2% of the SE beneficiaries receive a residual share (5%) of web visits from the prime visiting countries and all the rest of the web visits from other countries. This latter situation represents a high international reach.

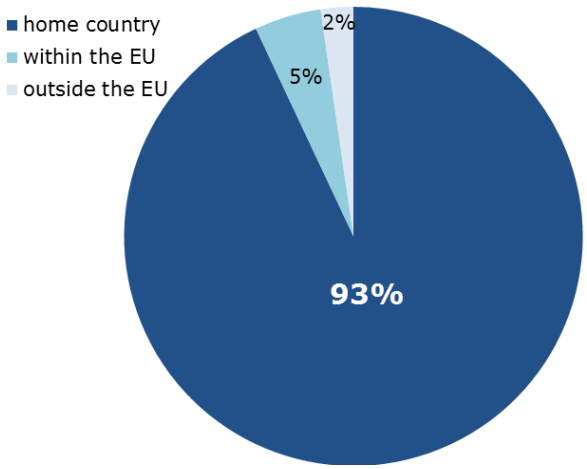
Figure 23: The share of internet visits from the prime country to the SE beneficiaries' websites



Note: The graph represents the distribution of the "clicks" from the prime country (% of total "clicks").
Source: Alexa (n=143)

Figure 24 looks closely at the companies that receive more than 75% of web visits from one country. For 93% of theSE beneficiaries their prime visiting country is actually their home country. Therefore, these startups are more focused on their domestic markets confirming the suspicion of little internationalisation.

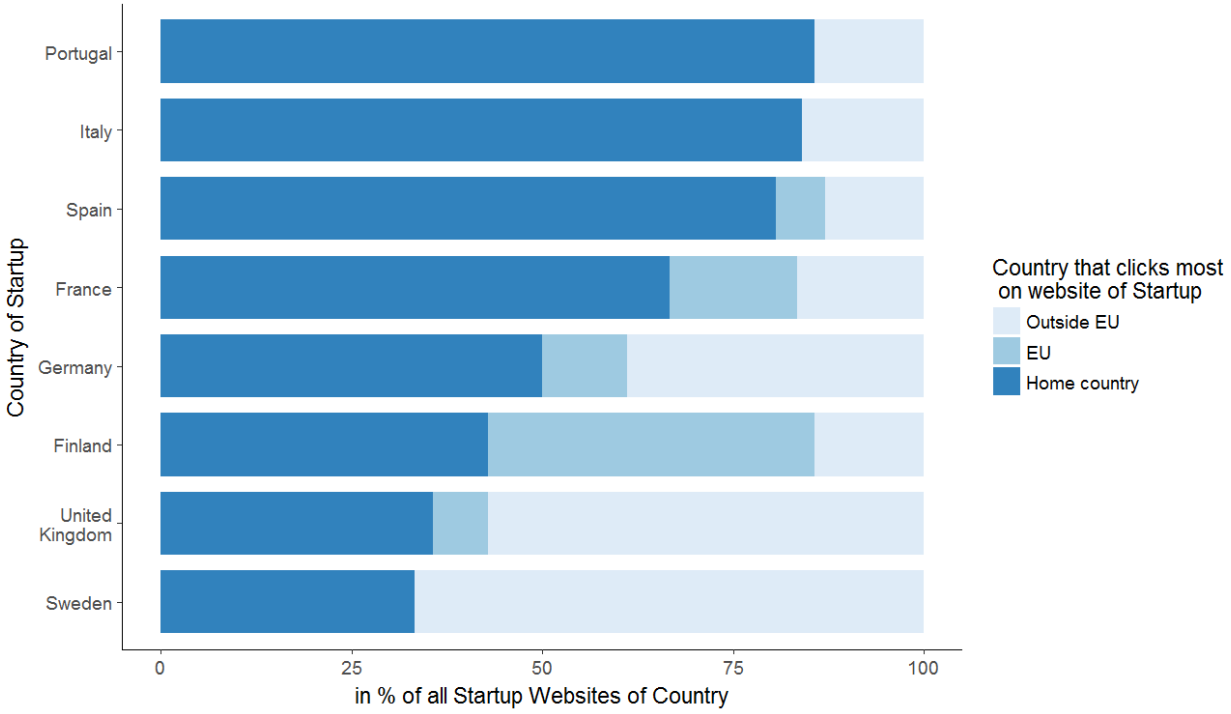
Figure 24: The share of visits from the home country to the SE beneficiaries' websites that receive more than 75% of web visits from one country



Note: The pie chart shows the share of domestic visitors in the companies with more than 75% of clicks from one country.
Source: Alexa (n=107)

Figure 25 shows the internet traffic of startups websites by country. Particularly companies from Portugal, Italy and Spain receive the most of their digital visits from their home country. Digital visits from abroad, when they take place, are predominantly from outside the European Union.

Figure 25: The internet traffic of the websites of SE beneficiaries by country



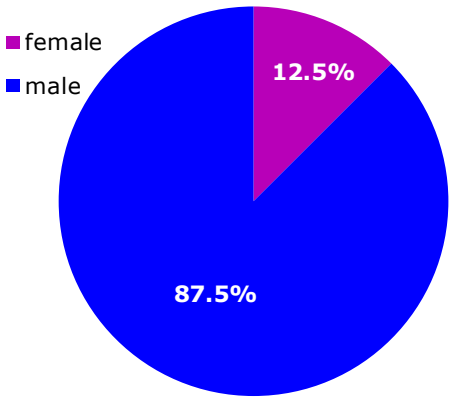
Note: The graph shows the shares of clicks on the startups websites by their home countries along with the country where the clicks originate from. Only countries with data on at least 10 startups are included.

Source: Alexa (n=121)

5.7 Gender of SE startups' funders

Figure 26 shows the distribution of SE startups' founders by gender. Nearly 90% SE startups were established by male entrepreneurs, so entrepreneurially-wise it looks that men makes it more than women. Although female entrepreneurs are few among the SE startups, their share is twice as high as the overall involvement of women in entrepreneurial activity in Europe (GEM 2017).

Figure 26: The share of female and male funders among the SE beneficiaries

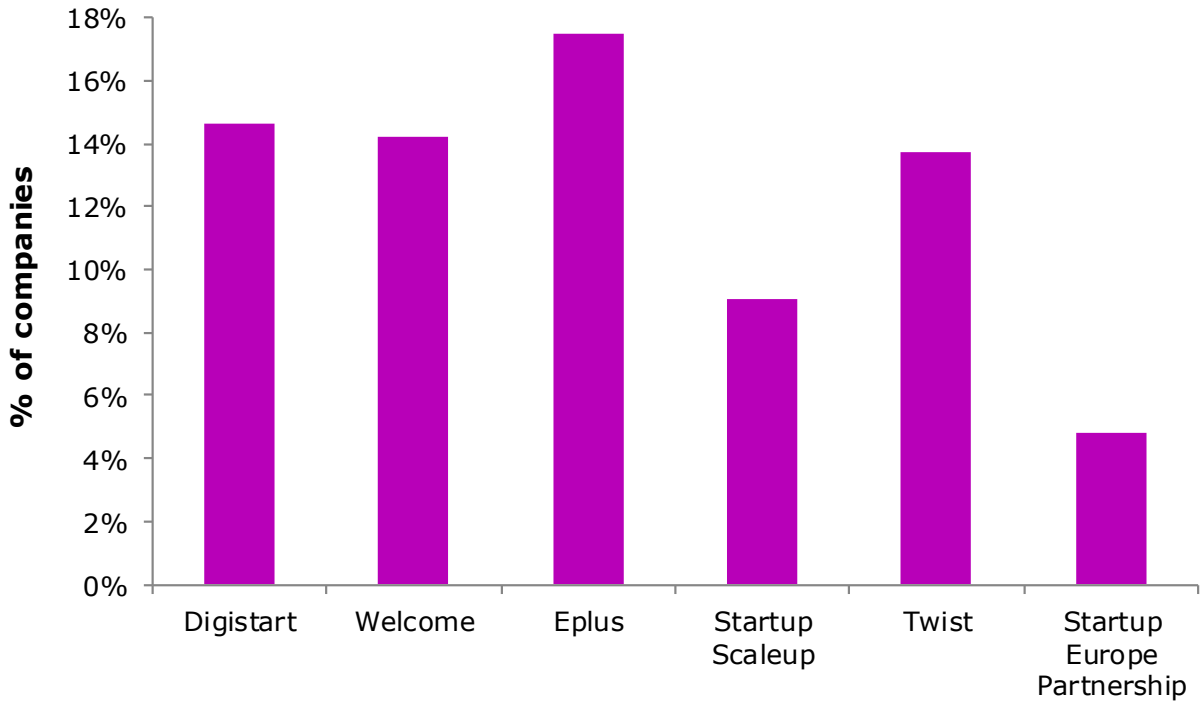


Source: Namsor (n=624)

Figure 27 shows the shares of female founders among startups by SE projects. The project with the lowest share of female entrepreneurs is Startup Europe Partnership while Eplus attains the highest one. The boosting project of Startup Europe Partnership related to the buffering type of support seems to be even more men-like companies than the

buffering and bridging projects. However, the share of women entrepreneurs slightly varies across the SE projects.

Figure 27: The share of female founders by project



Note: The graph shows the shares of female founders by project.
Source: Namsor (n=624)

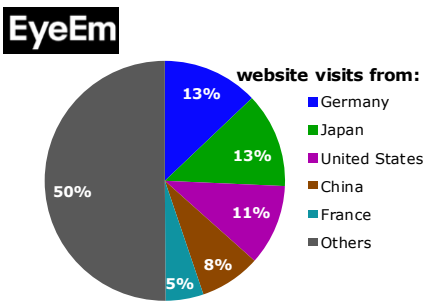
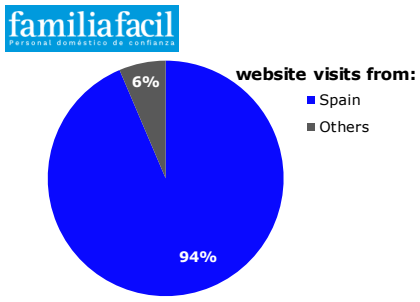
6 Two cases of Startup Europe beneficiaries

This chapter is about two extreme realities from the SE sample and Table 3 summarises the characteristics of these two companies.

The first case is a start-up with a clear orientation towards internationalisation: the German company EyeEm. This company is a photo sharing platform that "connects brands and agencies with today's most creative talents and proprietary machine learning technology to instantly surface the finest photos". It joined Startup Europe Partnership at 5 years old with a size of 45 employees led by a man entrepreneur. This company succeeded in obtaining VC funding up to the 3rd stage and it exhibits an international attitude witnessed by both its global and domestic internet ranks (31585th and 9230th respectively) and the worldwide composition of its web visits.

The second case regards a domestically oriented company: the Spanish FamiliaFacil. This company is a platform that connects families and providers of domestic services. It joined the project Welcome at 10 years old with a turnover of 175,000 € and a profit margin of -93.3 %. This company is led by a woman entrepreneur, did not tap into VC funding it definitely exhibits a domestic orientation witnessed by both its global and domestic internet ranks (188620th and 8273th respectively) and the composition of its web visits almost all from Spain.

Table 3: Two cases among the SE beneficiaries

Name	EyeEm	FamiliaFacil
SE project	Startup Europe Partnership	Welcome
Establishment year and place	2011 in Berlin	2006 in Madrid
Number of employees	45	N/A
Turnover	N/A	175,000 €
Profit margin	N/A	-93.3 %
Gender of the CEO	Man	Woman
VC funding rounds (amounts)	3 rounds (the 2nd of 4,600,000 € and the 3rd of 17,000,000 €)	0 rounds
Global internet traffic (rank)	31585th	188620th
Domestic internet traffic (rank)	9230th	8273th
Web visits		
Website	https://www.eyeem.com/	https://familiafacil.es/en

Source: Startup Europe DG Connect

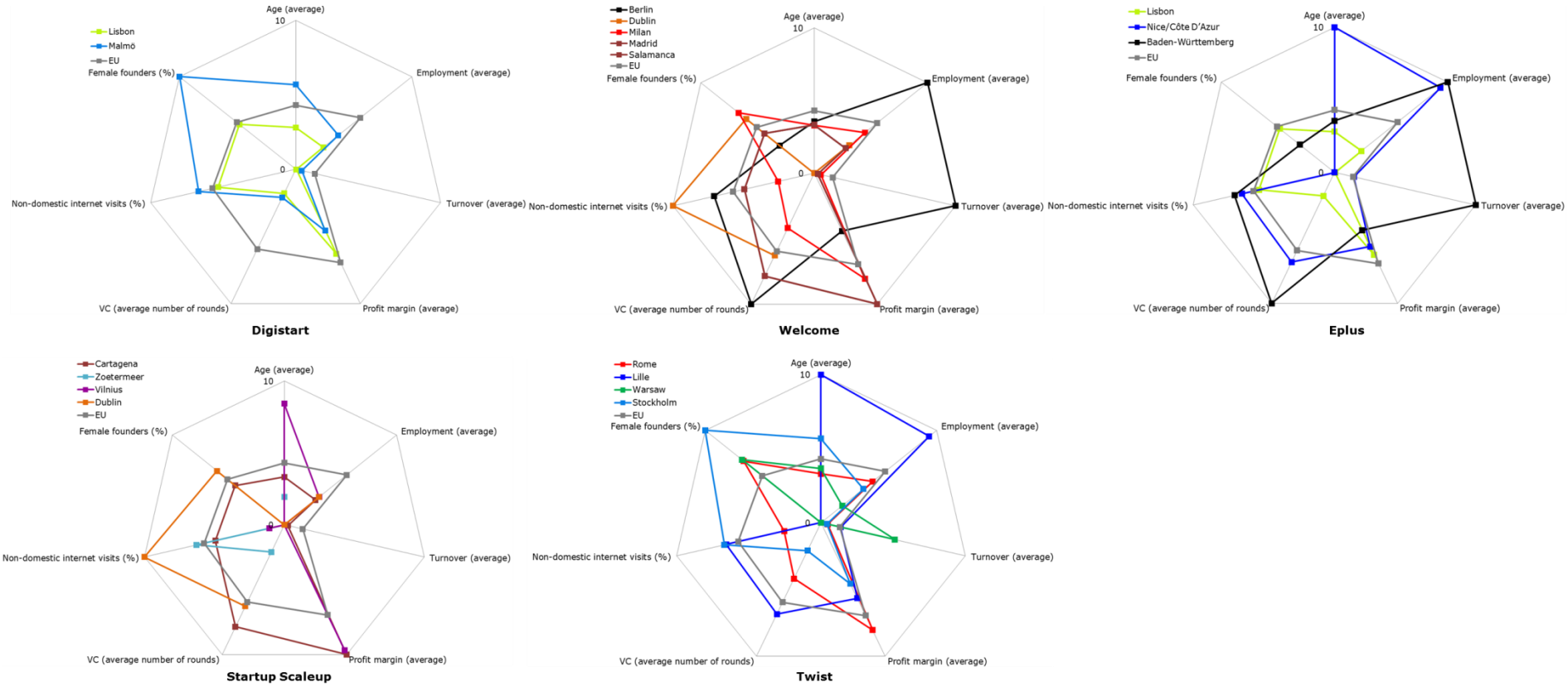
7 A synthesis of the SE ecosystems

Figure 28 presents the SE beneficiaries' characteristics at country level of the SE ecosystems that are identified expressly by the SE projects. Specifically, the graph shows data that are normalised between 0 and 10 of the companies average age, the average employment, the average turnover, the average profit margin, the average number of VC rounds, the percentage of female founders and the percentage of non-domestic internet visits in the countries identified by the SE projects. This graph particularly complements the information from Figure 6 with information of the companies' traits that are discussed throughout this report. In the project Digistart similarities in the shape of the national ecosystems appear in the radar chart, Portugal with the representative ecosystem of Lisbon scores lower than Sweden represented by Malmö in the SE projects. At the same times both affinities –as for the average turnover and the average number of VC rounds- and complementarities on the other indicators appear.

Certainly, Figure 28 displays more mixed evidence than Figure 5 and Figure 6 and it shows the existence of heterogeneous realities in ecosystems that gathered together within the SE projects. By means of example, France (represented by Lille and Nice/Côte D'Azur) is over the EU average concerning the framework conditions to scale up business and has on average the oldest (5 years old) companies from the SE ecosystems. Ireland (represented by Dublin) is also a country with very good framework conditions but has instead on average the youngest (less than 2 years old) ones. At the same time French companies are also among the most sizeable (with an average of 13 employees) together with the German ones while the slimmer firms are from the Netherlands (with 3 employees on average). German companies are at the top of turnover with on average 5,700,000€, while the profit margin is commonly negative everywhere and Spanish firms have an average profit margin of -8.5%. As for the average numbers of VC rounds the companies from Germany (almost 3 rounds), Spain, France and Ireland are at the top (in the case of Spain, a bias may be due to the very high presence of companies from this country). About the internationalisation, the Irish companies are at the top with 65% of web visits from other countries while companies from Sweden have the highest female founders (20%) vis-à-vis the other SE ecosystems.

Finally, the diversity of the SE beneficiaries is not always aligned to the assessment of the framework conditions for scaleups. In this respect the SE brought together rich variability at company level from which companies themselves. For example, Sweden provides excellent framework condition as for access to finance but concerning the VC funding of the SE sample it appears that on average German companies benefit more than Swedish ones from advanced funding mechanisms. The Swedish high standing entrepreneurial culture matches well with the highest percentage of women that start up a business in this country.

Figure 28: Characteristics of the beneficiaries in the SE ecosystems on a scale between 0 and 10



Note: The graph presents the SE ecosystems by means of min-max normalised values on a scale between 0 and 10 of the following indicators at country level: the average age, the average employment, the average turnover, the average profit margin, the average number of VC rounds, the percentage of female founders and the percentage of non-domestic internet visits. Data on turnover and profit margin are not available for the Netherlands and Ireland; data on VC funding are not present for Poland.

Source: Startup Europe DG Connect; Orbis, Bureau van Dijk; Venture Source, Dow Jones; Alexa; Namsor

8 Conclusions and recommendations

The review of six Startup Europe projects, i.e. *Welcome, Digistart, ePlus, Startup Scaleup, Twist and Startup Europe Partnership,* reveals **considerable differences in terms of their target groups**, geographical reach and value proposition. In order to assess how effectively the support offered by the projects matched the needs of the startups, this analysis employed the 3B (i.e. buffering, bridging, boosting) framework of policy support at different entrepreneurial phases (i.e. stand-up, start-up, scale-up). Therefore, **the SE programmes are associated to a specific type of support to entrepreneurship based on their offerings**. For example, the project Digistart offers training and consulting services, therefore it qualifies as a buffering support to the early stage of entrepreneurial activity. In contrast, Startup Europe Partnership focuses on of promising ventures in order to link them with equity investments and to accelerate their growth, therefore it appears as a boosting support.

Even if there is a recognised need to improve the coherence and linkages in the EU entrepreneurial ecosystem, a reflection about the relevance of the value proposition of projects goes hand in hand with the difficulty that policy has to directly enhance the systemic conditions. For future releases of SE **it is absolutely relevant to design the value proposition of projects clearly**, together with well-defined milestone achievements, to make sure of attracting the "right" startups and to offer them suitable support of buffering/bridging/boosting.

A typical SE beneficiary is an early stage, financially constrained venture that operates in the digital domain and comes from a country with limited private investments in young firms. However, the SE beneficiaries exhibit some differences. The characteristics of the SE beneficiaries also confirm that Digistart, for example, focuses on the early phases of the startup lifecycle while Startup Europe Partnership attracts more advanced firms. This may suggest that overall **the matchmaking between the SE offerings and the startups has been efficient**. In addition to that, it also highlights the necessity of customised support on startups' characteristics and development phase.

Nonetheless, the fact that the majority of startups face financial difficulties and come from countries with little VC funds to novel and risky ventures stirs some reflection. A reasonable assumption may be that some companies only joined the SE projects to find the support that they struggle to find elsewhere. In this case it is probable that a number of unsuccessful small and medium enterprises hid among the worthy startups operating at loss but concealing a true potential. To rule out this possibility, the recommendation is that project coordinators may perhaps **perform a better screening to disentangle unsuccessful SMEs** from the actual startups operating at loss but with a real potential.

A worrying finding is that the business of the majority of startups is confined in the home country. At first sight, this seems a confirmation of the fragmentation of the European market. However, considering the heterogeneous internationalisation of startups from different countries, an alternative explanation could be that founders from specific ecosystems are either reluctant or not equipped with necessary know-how to pursue international business strategies. In order to address this possibility, initiatives like SE should **directly target the lack of internationalisation** to better support worthy startups that are not equipped for international business strategies yet.

Finally to effectively monitor similar initiatives and to strengthen the conclusions of this type of study, it would be ideal to have a **systematic collection of data during and after the SE initiative** to track companies' records. Due to its limitations, the current study cannot be seen as a validation exercise. A valid control group is necessary to answer questions on whether participating to SE enhanced the internationalisation, the likelihood of receiving VC funding, or other relevant dimensions. However, even if feasible from the methodological perspective, it could not yield a definite answer. The SE initiative aims to reinforce the systemic conditions of the European entrepreneurial ecosystem by, among others, increasing the connections of the ecosystem and propagating the entrepreneurial culture. These interventions are more subtle than

traditional policy mechanisms based, for example, on direct subsidies to individual actors aimed at enhancing their effort in desired activities, e.g. R&D. Therefore, a number of measureable objectives that are meant to achieve by means of SE should be clearly identified in order to assess these *soft* policy interventions. This should be done together with collection of relevant and systematic data to track the progress of the initiative towards its objectives.

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