HOW DO WE CREATE THE BEST CONDITIONS FOR ENTREPRENEURS AND INNOVATORS?

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Introduction

How do cities support its knowledge production and knowledge intensive companies? In recent years, leading cities have had growing interest and investments in so-called Innovation Districts – districts defined by scholars as: "The ultimate mash up of entrepreneurs and educational institutions, start-ups and schools, mixed-use development and medical innovations, bike-sharing and bankable investments – all connected by transit, powered by clean energy, wired for digital technology, and fuelled by caffeine" (Brookings Institute, 2014).

In Science City Lyngby we – the science city organization, the municipality, The Technical University of Denmark, and many knowledge intensive companies – are aiming to create a university city that cultivate knowledge production, innovation, and entrepreneurship. Inspired by several innovation districts abroad, we are eager to pursue the development of a Nordic innovation district that reflects the specific Nordic qualities of innovation, entrepreneurship and urban environment combined with the welfare state and high levels of trust and transparency.

This analysis aims to understand which undertakings are needed to give the best conditions and support for start-ups and their future growth. It brings insight about the investments that needs to be cultivated if we are to succeed in fertilizing the entrepreneurial spirit, create more start-ups and growth companies, in particular scale-ups. The analysis is one among many pieces to the puzzle that defines an innovation district. Other initiatives have been initiated as well both in terms of strategic planning and concrete activities and programs – and many more will follow in the coming years.

We hope you enjoy reading the analysis and will take part in discussing our findings.

Science City Lyngby, May 2020

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Executive Summary

This analysis examines certain conditions for start-ups to succeed. In total 61 starts-ups have participated in the survey. The analysis is thus indicative, but not statistically representative.

Key Findings

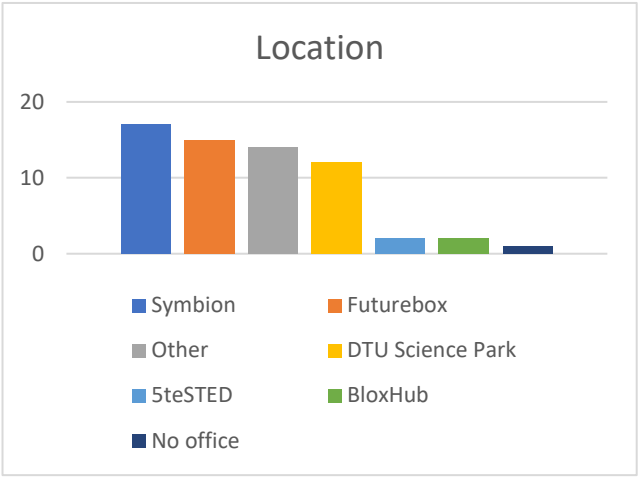
- There is huge need for **test environments**, living labs, makerspaces, proof-of-concept centres and the like. 60 % of the respondents state that these test facilities are of high or critical importance for their success. 46 % of the respondents experience that they do not have access or only low access to test environments.
- **Research and educational institutions** are also seen as important to the start-ups. 59 % of the respondents claim that the institutions are important to their success.
- There seems to be a lack of **Incubators and accelerators**. These assets are less important than test environments and research institutions, but still important.
- The urban environment does not seem be important to the start-ups compared to other assets surveyed in this analysis, though the analysis reveals that there is a higher demand for **services** such as supermarkets, hotels, doctors etc., than what the start-ups experience are available.
- Access to **talent with the required skills** is the most important asset for the success of start-ups. 77% of the respondents state that access to talent is of high or critical importance for the success of their company. Less than 12 % of the start-ups experience that they have access to none or few talents. Among those respondents who find talent to be of high or critical importance 86 % are start-ups between 0 and 3 years old.
- The start-ups view on the accessibility to **researchers and scholars**, the majority – or 51 % - states that this asset is of high or critical importance to their success. 48 % experience that there are many or an abundance of researchers and scholars in their environment and thus on a satisfactory level
- 54 % of the respondents say that **networking of peers** with whom to share knowledge is of high or critical importance for their company's success. Very few - only 13% - find it of no or low importance.
- When it comes to **network organizations and community builders**, 46% state that these are of high or critical importance to their company's success. 28 % of the start-ups experience that network organizations and community builders are not or less available to them.
- External help and support are also seen as important assets, particularly **external investors**, **external counselling about business development** and **external counselling about product development**. There is a discrepancy between the importance and the experienced availability of these assets.

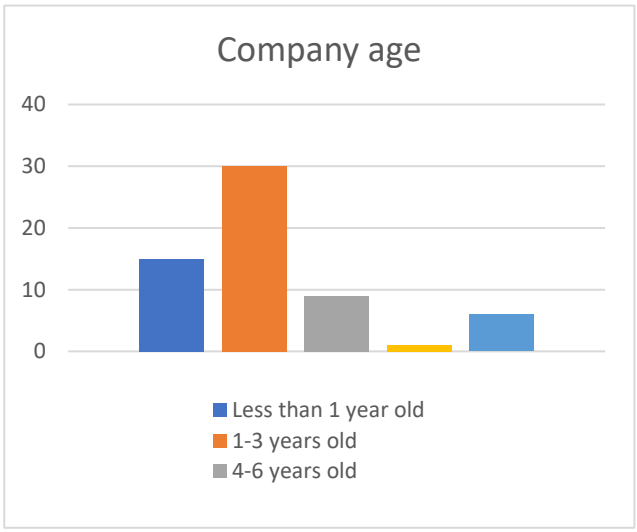
Methodology

The analysis is based on a survey conducted during January and February 2020.

The target group for the survey was start-ups. Therefore, we invited respondents in the main start-up environments in the Copenhagen area to take part.

In total 65 responded to the survey. Four responses were invalid. Thus, the analysis is based on the 61 answers.

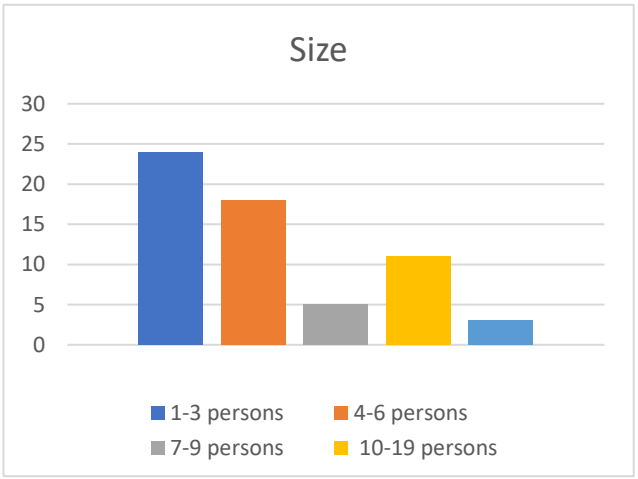




Who are the respondents?

Our focus on receiving answers from start-up companies is reflected in the population of respondents. Mainly start-ups located in Symbion, Futurebox and DTU Science Park participated in the survey.

45 (74%) of the respondents are companies with an age between 0 and 3 years old. 42 (69%) of the respondents have between 1 and 6 employees.



Theoretical framework

The analysis is placed in a theoretical framework that is inspired by the academic work of Julia Wagner and others' research about innovation districts. Wagner suggests a framework for understanding innovation districts that consists of economic, network and physical assets.

Economic assets consist of innovation drivers and cultivators. Innovation drivers are growth sectors, knowledge anchors, large companies, SME's, start-ups and entrepreneurs, research, and educational institutions, etc. that focus on developing cutting-edge technologies, products, and services for the market. Innovation cultivators are companies, organizations, or groups that support the growth of individual, firms, and their ideas. They include incubators, accelerators, proof-of-concept centres, tech transfer offices, local high schools, etc. advancing the specific skills sets of the innovation-driven economy.

Networking assets are initiatives and groups that encourage experimentation and are a testing ground for ideas; they help firms acquire resources; they strengthen trust and collaboration within and across sectors; and they help firms enter new markets including global markets. A growing body of research reveals how networks are increasingly valuable and prolific within innovation-driven economic clusters. Networks are important sources of new or critical information for new discoveries.

Physical assets are what knit a district together and/or tie it together to a broader area. They aim to eliminate barriers that hinder relationship-building and connectivity. Therefore, knowledge about the physical assets of one's environment is important for designing and programming the spaces strategically across a district in efforts to support innovation drivers and cultivators as well as to facilitate the building of networks.

We have used this theoretical or conceptual framework in producing the questionnaire for the survey as well as how we communicate the results. However, we do not pretend that the analysis includes all assets under each asset category. In fact, we have deliberately focused on those we believed to be the most important for start-ups with growth ambitions.

Analytic Methodology

For each question in the survey, the respondents were asked to rate the importance and the availability of specific economic, physical, or networking assets. The respondents were given six options for the answer to each question about the importance of an asset: None, few, several, many, abundant and don't know. Likewise, the respondents were given six options regarding their experience about the availability of an asset: No importance, low importance, medium importance, high importance, critical importance and don't know.

In order to make direct comparisons of the respondents' desirability and the experienced availability of a given asset, we converted each option to a value (none/no importance = -2, few/low importance = -1, several/medium importance = 0, many/high importance = 1, abundant/critical importance = 2, and don't know = 0).

The values about importance of a given asset were added together, as were the values about the experienced availability. This gave us an indication of the respondents' reflections on the importance of the asset and their experience of its availability, which we have compared and visualized in a coordinate system.

In the analysis we look for discrepancies between the importance of an asset and the experienced availability. We choose to go into detail the some of these by looking at who thinks an asset is of high or critical importance using our base data (the company's age, number of employees and the company's ambition).

Ten companies have been selected for an in-depth interview. The interview results are reflected in ten case studies adding to the survey data.

Validity and reliability

From the outset of the survey we have understood that the survey would not be statistically valid. However, the survey is indicative and functions as a marker for further investigations and initiatives. The

survey is also a quantitative supplement to the qualitative findings of this study, which are the 10 cases of companies.

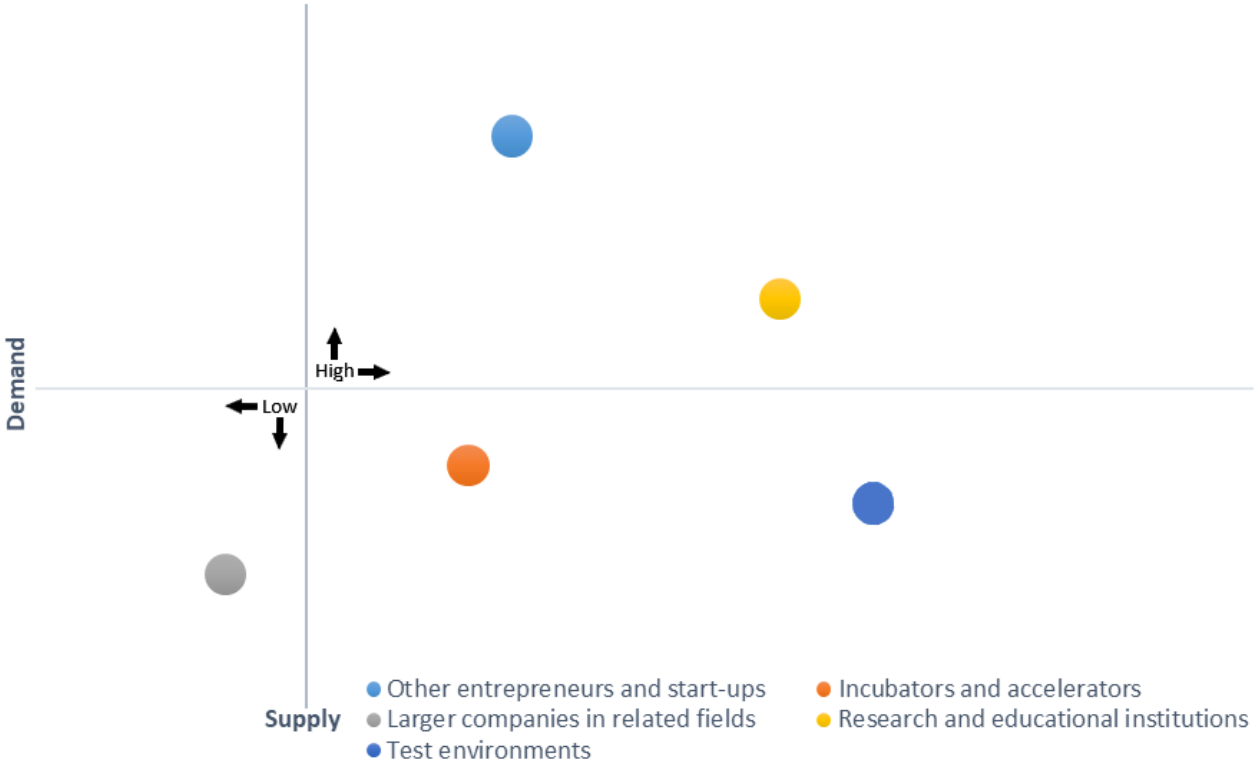
In terms of reliability of the survey there are no other similar studies made to which we can compare the results, and thus the reliability. However, reviewing the collected data we see that there are no significant differences in the answers from start-ups in the various environments. Thus, we believe that the data we have gathered are reliable.

Economic Assets

Economic assets consist of innovation drivers and cultivators, such as knowledge anchors, large companies, SME's, start-ups and entrepreneurs, research and educational institutions, etc. as well as incubators, accelerators, proof-of-concept centres, tech transfer offices, local high schools, etc.

The graph 1 below compares the respondents' interest in five economic assets and their experienced availability of these. The economic assets are 1) other entrepreneurs and start-ups, 2) incubators and accelerators, 3) large companies in related fields, 4) research and educational institutions, and 5) test environments.

Graph 1: Economic assets



The graph shows that **test environments** and **research and educational institutions** are in particularly high demand, and that these demands are not met by the current supply. The survey shows that more than 60 % of the respondents find test environments to be of high or critical importance for the success of their company. Similarly, 59 % find research and educational institutions to be of high or critical importance.

Also, **incubators and accelerators** are in relative high demand compared to the current accessibility to these. 41% of the respondents says that incubators and accelerators are of high and critical importance.

Looking into the data of the respondents who answer high or critical importance either on test environments or research institutions reveals that they are mainly start-ups from 0-3 years old. To conclude, it seems of critical importance the younger a company is to have access to test environments, research and educational institutions and an incubator or accelerator maybe supported by a mentor program, which many of the cases demonstrate.

Chart 1: Start-ups to whom test environments are of high or critical importance in relation to their age.

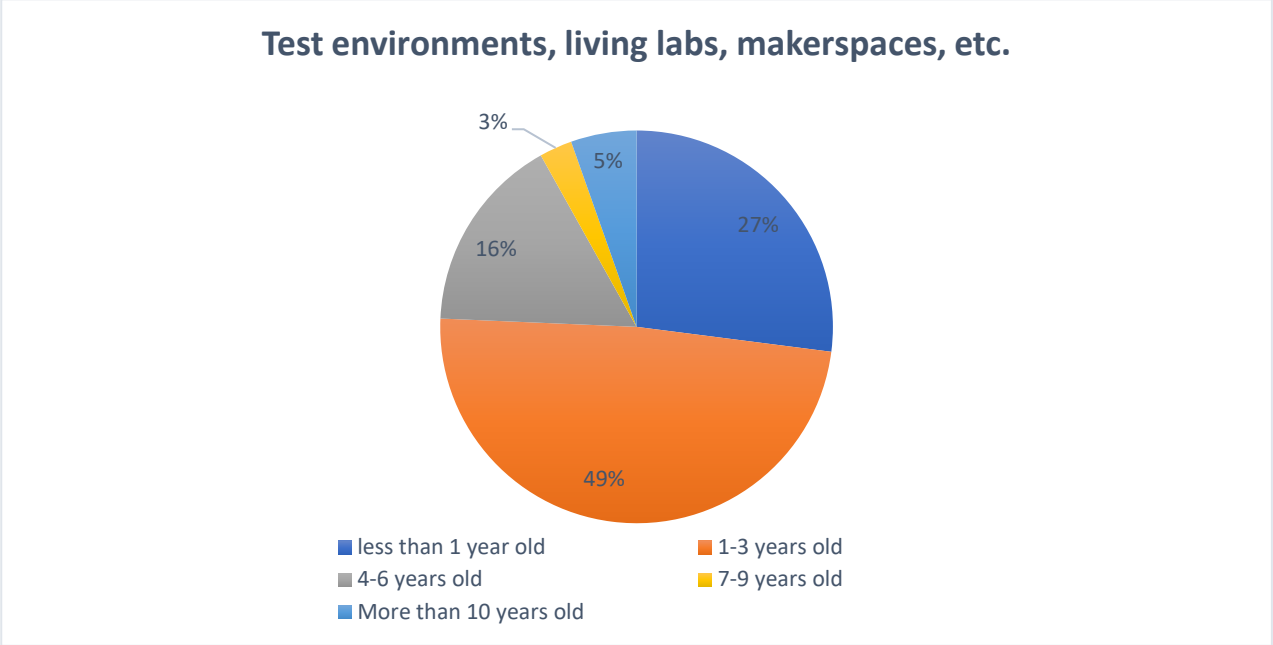


Chart 2: Start-ups to whom research and educational institutions are of high or critical importance in relation to their age.

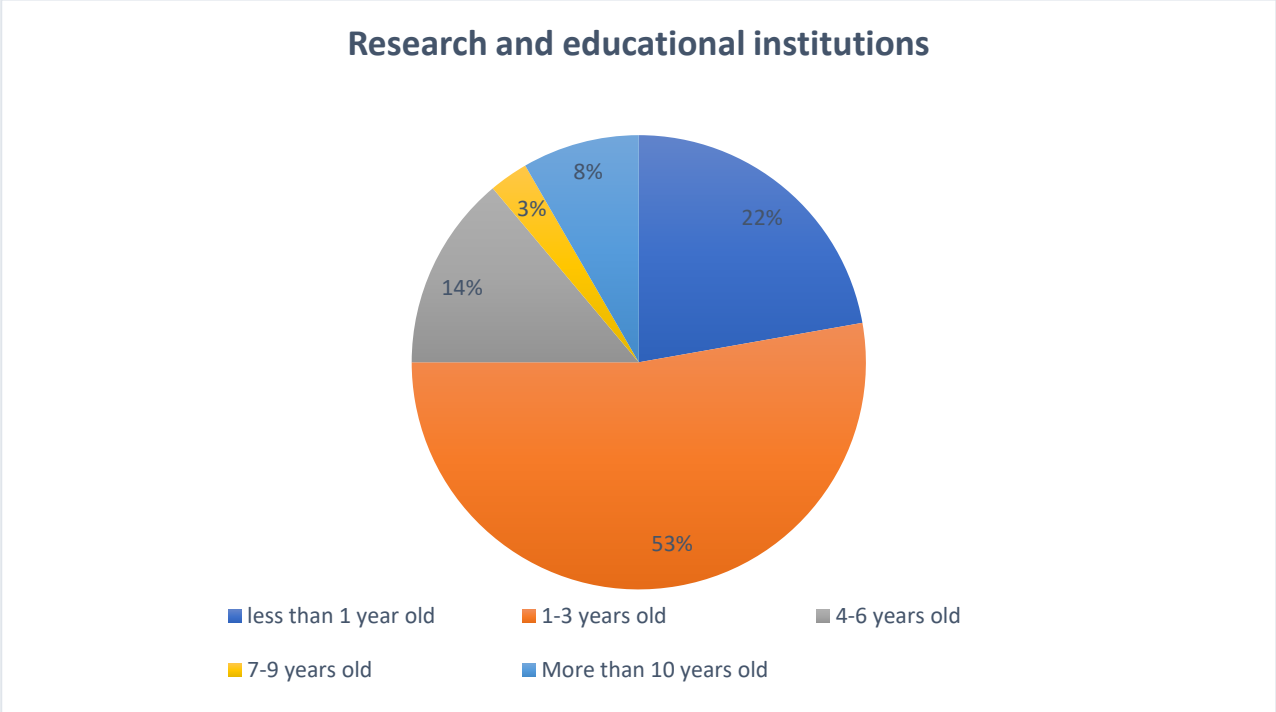


Table 1 shows the demand and the supply of incubators and accelerators, research and educational institutions, and test environments of all respondents. Besides the high demand for test environments, research, and educational institutions – as well as incubators and accelerators – it shows that the respondents experience that these economic assets are not available in their environment. Particularly, there is a large discrepancy between demand and supply of **test environments.**

Table 1: The demand and the supply of incubators and accelerators, research and educational institutions, and test environments of all respondents.

Demand	No importance	Low importance	Medium importance	High importance	Critical importance	Don't know
Incubators	1.64%	19.67%	27.87%	29.51%	13.11%	8.20%
Research	3.28%	14.75%	16.39%	37.70%	21.31%	6.56%
Test env.	6.56%	9.84%	19.67%	29.51%	31.15%	3.28%
Supply	**None**	**Few**	**Several**	**Many**	**Abundant**	**Don't know**
Incubators	6.56%	34.43%	27.87%	18.03%	4.92%	8.20%
Research	4.92%	19.67%	32.79%	26.23%	13.11%	3.28%
Test env.	9.84%	36.07%	14.75%	19.67%	3.28%	16.39%

With regards to the two remaining economic assets **– other entrepreneurs** and **large companies** in related fields – graph 1 and table 2 shows that there is more convergence between the supply and demand. There is an interest in working in an environment with other start-ups, and the respondents experience that this demand is fulfilled. This is of course not surprising, since the survey was conducted in environments for start-ups.

As for large companies in related fields it is interesting to note that a relatively large proportion of respondents find these companies of no or low importance.

Table 2: The demand and the supply of other entrepreneurs and large companies.

Demand	No importance	Low importance	Medium importance	High importance	Critical importance	Don't know
Entrepreneurs	3.28%	24.59%	29.51%	29.51%	13.11%	0.00%
Large companies	11.48%	24.59%	32.79%	21.31%	8.20%	1.64%
Supply	**None**	**Few**	**Several**	**Many**	**Abundant**	**Don't know**
Entrepreneurs	3.28%	11.48%	22.95%	39.34%	21.31%	1.64%
Large companies	18.03%	32.79%	24.59%	14.75%	3.28%	6.56%

Physical Assets

The physical assets are what knit a district together and/or tie it together to a broader area. For example, infrastructure is especially important for the success of an innovation district. Because we did a pilot study which confirmed this, we chose not to ask questions about infrastructure – the respondents in the pilot project regarded good infrastructure as a minimum criterion (i.e. that particularly parking areas must be available).

Therefore, we have focused our attention to the general, urban environment such as shopping and cafés, services such as supermarkets and hotels, and public spaces.

Graph 2: Physical Assets

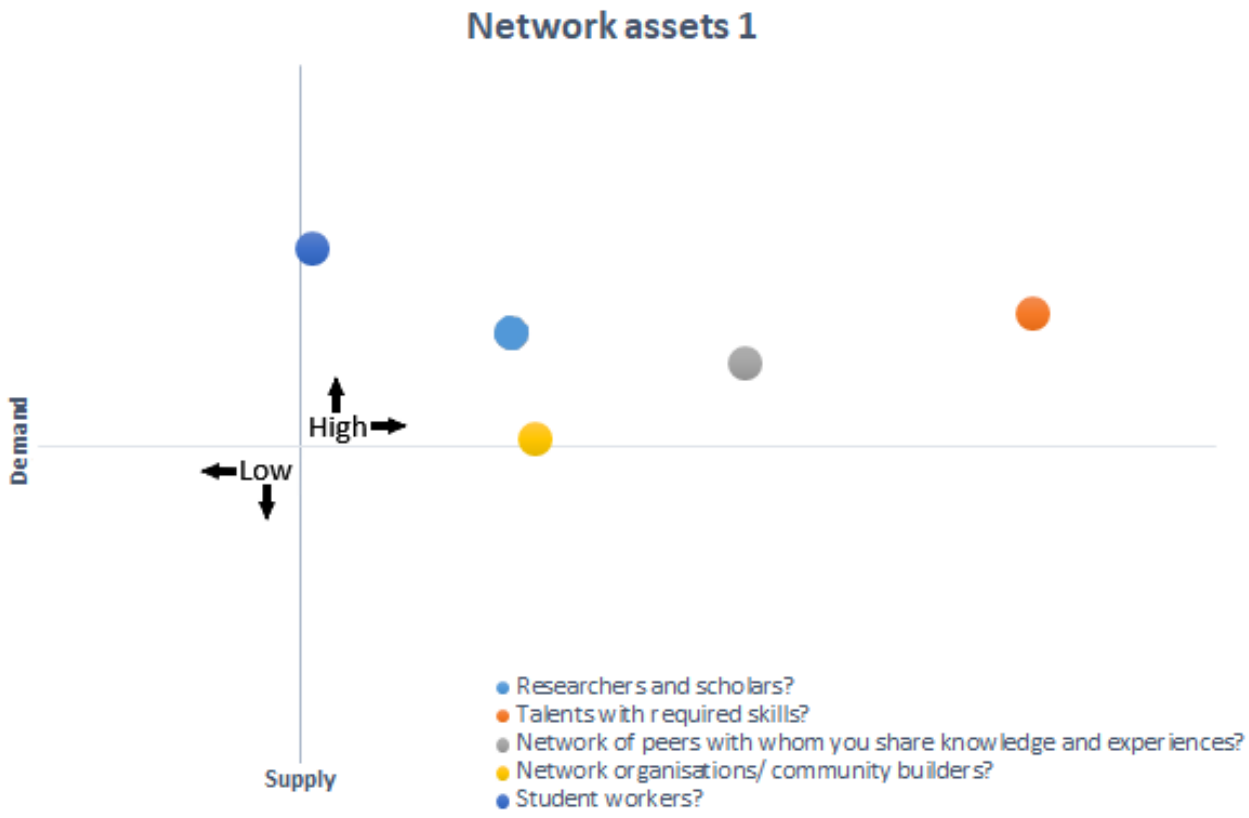
The graph shows that neither of the three physical assets are of importance to the start-up companies. Both having access to **public space** or a **vibrant urban environment** are in low demand, and the companies seems to have a sufficient supply of these assets. As to **services** such as supermarkets, hotels, doctors etc., the demand is higher than the experienced availability.

Networking Assets

Networking assets are initiatives and groups that encourage experimentation and are a testing ground for ideas; they help firms acquire resources; they strengthen trust and collaboration within and across sectors; and they help firms enter new markets including global markets.

The graph 3 below compares the respondents' interest in five networking assets and their experienced availability of these. The networking assets are 1) researchers and scholars, 2) talents with required skills, 3) network with peers, 4) network organizations and community builders, and 5) student workers.

Graph 3: Networking Assets 1



Of the five networking assets presented in Graph 3, three of them stand out: 1) Talents with required skills, 2) network of peers, and 3) network organisations/community builders.

The respondents weigh **talents with required skills** as the most important asset out of all assets examined in the survey. 77% of the respondents state that access to talents is of high or critical importance for the success of their company, as can be read in table 3. Less than 12 % of the start-ups experience that they have access to none or few talents. Among those respondents who find talents to be of high or critical importance 86 % are start-ups between 0 and 3 years old.

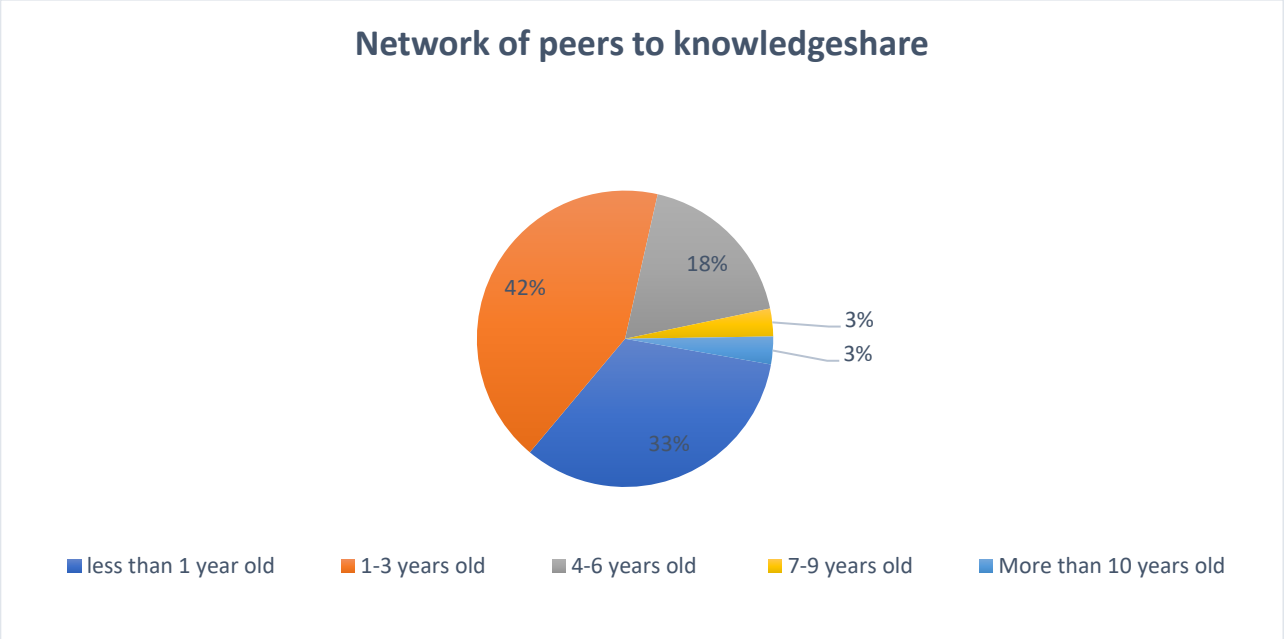
Table 3: The demand and the supply of talents, network with peers and network organizations.

Demand	No importance	Low importance	Medium importance	High importance	Critical importance	Don't know
Talent	1.64%	11.48%	9.84%	47.54%	29.51%	0.00%
Network of peers	3.28%	9.84%	32.79%	36.07%	18.03%	0.00%
Network organizations	4.92%	16.39%	27.87%	36.07%	9.84%	4.92%
Supply	**None**	**Few**	**Several**	**Many**	**Abundant**	**Don't know**
Talent	1.64%	9.84%	44.26%	31.15%	8.20%	4.92%
Network of peers	4.92%	18.03%	29.51%	32.79%	8.20%	6.56%
Network organizations	8.20%	19.67%	34.43%	27.87%	4.92%	4.92%

Regarding the importance of **networking of peers** with whom to share knowledge, table 3 reveals that 54 % find this asset to be of high or critical importance for their company's success. Very few only 13% finds it of no or low importance.

As shown in chart 3, 75 % of the start-ups who find networking with peers are of high or critical importance are less than four years old. All this indicate that knowledge sharing, and mutual sparring is very important to start-ups, in particular for early start-ups.

Chart 3: Start-ups to whom networking with peers to share knowledge are of high or critical importance in relation to the start-ups age.



When it comes to **network organizations and community builders**, 46% state that it is of high or critical importance to their company's success. Of those, young start-ups are the main part as shown in chart 4. 28 % of all the start-ups experience that network organizations and community builders are not or only less available to them.

Chart 4: Start-ups to whom network organization and community builders are of high or critical importance in relation to the start-ups age.

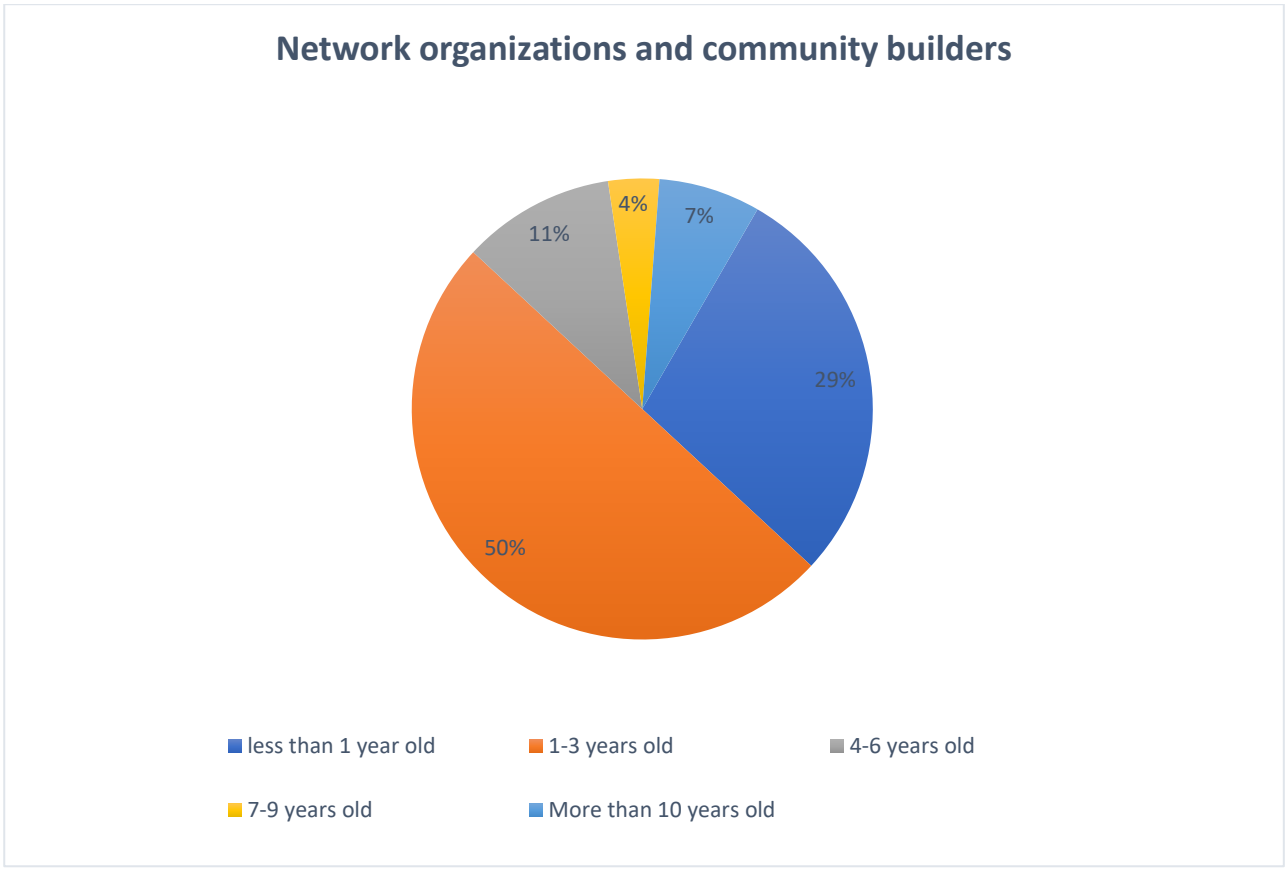


Table 4 illustrates the demand and the supply of researchers and scholars, and student workers. Regarding the start-ups view on accessibility to **researchers and scholars**, the majority – or 51 % - states that this asset is of high or critical importance. 48 % experience that there are many or an abundancy of researchers and scholars.

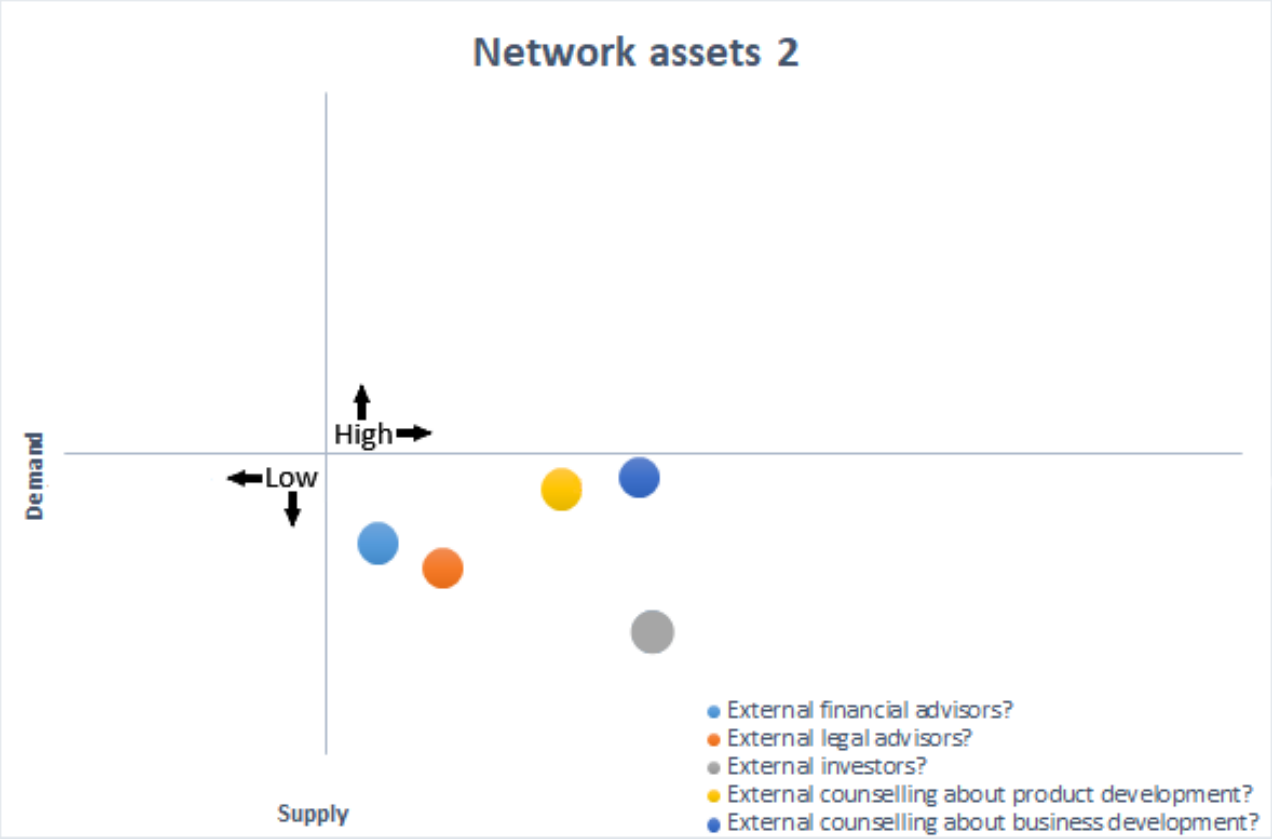
With respect to student workers, graph 3 show that there an abundancy of student workers compared to the demand.

Table 4: The demand and the supply of researchers and scholars, and student workers.

Demand	No importance	Low importance	Medium importance	High importance	Critical importance	Don't know
Researchers/ scholars	8.20%	24.59%	16.39%	34.43%	16.39%	0.00%
Student workers	11.48%	21.31%	31.15%	19.67%	13.11%	3.28%
Supply	**None**	**Few**	**Several**	**Many**	**Abundant**	**Don't know**
Researchers/ scholars	6.56%	19.67%	21.31%	32.79%	14.75%	4.92%
Student workers	4.92%	8.20%	29.51%	36.07%	16.39%	4.92%

Graph 4 shows five different forms of external advisors and support: 1) external financial advisors, 2) external legal advisors, 3) external investors, 4) external counselling about product development, and 5) external counselling about business development.

Graph 4: Networking Assets 2



Both graph 4 and table 5 show that particularly **external investors** is an asset that start-ups find important for the success of their company. 49 % of the start-ups finds external investors of high or critical importance to their success, but 51 % also stated that they had access to non or few external investors. It is mainly young starts-up, less than four years old, that find external investors important.

External counselling about business development and **external counselling about product development** are also important to the start-ups. Respectively, 49 % and 47 % of the respondents state that these assets are of high or critical importance to the success of their company. Also here, there is a discrepancy between the importance and the experienced availability as 31 % and 29 %, respectively, of the start-ups experience none or few advisors are available in their environment.

External legal and **financial advisors** are also important to the start-ups. And even though many respondents experience a shortage in the availability of these assets, the discrepancy between the importance and the accessibility is less outspoken.

Table 5: The demand and the supply of five different external advisors and support

Demand	No importance	Low importance	Medium importance	High importance	Critical importance	Don't know
Financial advisors	4.92%	32.79%	21.31%	26.23%	11.48%	3.28%
Legal advisors	3.28%	31.15%	21.31%	32.79%	9.84%	1.64%
Investors	6.56%	24.59%	16.39%	19.67%	29.51%	3.28%
Product development counselling	4.92%	21.31%	22.95%	34.43%	13.11%	3.28%
Business development counselling	3.28%	19.67%	26.23%	32.79%	16.39%	1.64%
Supply	**None**	**Few**	**Several**	**Many**	**Abundant**	**Don't know**
Financial advisors	4.92%	36.07%	31.15%	14.75%	3.28%	9.84%
Legal advisors	8.20%	31.15%	32.79%	16.39%	0.00%	11.48%
Investors	11.48%	39.34%	26.23%	13.11%	0.00%	9.84%
Product development counselling	6.56%	22.95%	39.34%	19.67%	3.28%	8.20%
Business development counselling	3.28%	27.87%	39.34%	18.03%	4.92%	6.56%