

REGIONAL MAPS

Exploratory and gap analysis on the survey results related to Innow project

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Executive summary

Project partners came together a few years ago in order to join forces for SME and startup development and improve innovation capabilities in the region. The partners all agree that a sustainable ecosystem for driving innovations to the market should contain large companies. The opportunity is the difficulty as well: while a large company works along stable business processes, innovators usually try new business models and processes. The innovations can benefit from stable sales channels, but the cooperation with large companies demand adaptability from both sides.

How can an ecosystem help these business links come through and develop? What support should we provide?

This is the first document before developing the business support package for SMEs, startups, and innovation support package for LCs that present the results of our survey, analytics and gives the initial directions.



Problem statement, goals of the analysis

Presentation of the measurement environment

The foundation of the gap analysis was a survey, which was conducted among small and medium-sized enterprises (hereinafter SMEs), Start-ups as well as big corporates. These questions touched upon 7 different aspects of business life, from organizational questions through technology to the field of market and customers. The original questionnaire was in English; however, it was translated to the countries' language because the need of some responders.

As for the form is concerned, the questionnaire was filled in online, which induces reliable data for the analysis. The gathered data were treated and kept in accordance with the GDPR instructions. The data were only used by the partners of InNow Interreg partners, third party did not have a chance to get an insight to them.

A link was shared among the responders, and they had the access to the questions. The duration of the data collection was 3 months, from November 2019 to February 2020. The partners' responsibility was to collect data in their country of representation. During this period, events, site visits, and online e-mail messages were organized and coordinated. These kinds of personal meetings there were opportunities to ask questions, make them clearer for the responders. There was not any problem with filling the questionnaire in, due to the testing phase before the publication of the questionnaire.

The first part of the questionnaire was about demography and other questions which helps the analysts carry out the gap analysis. These questions included country of origin, type of the company, size of the company, revenue data, technology readiness level (TRL) as well as does the company own any patent. These questions made the categorization possible for the analysts. The second part of the questionnaire was about asking 30 questions from 2 aspects in a 1-5 likert scale. These aspects were the following:

- Importance: "The higher the score you give for 'Importance / need' the more effort we will carry out to assist you in that topic."



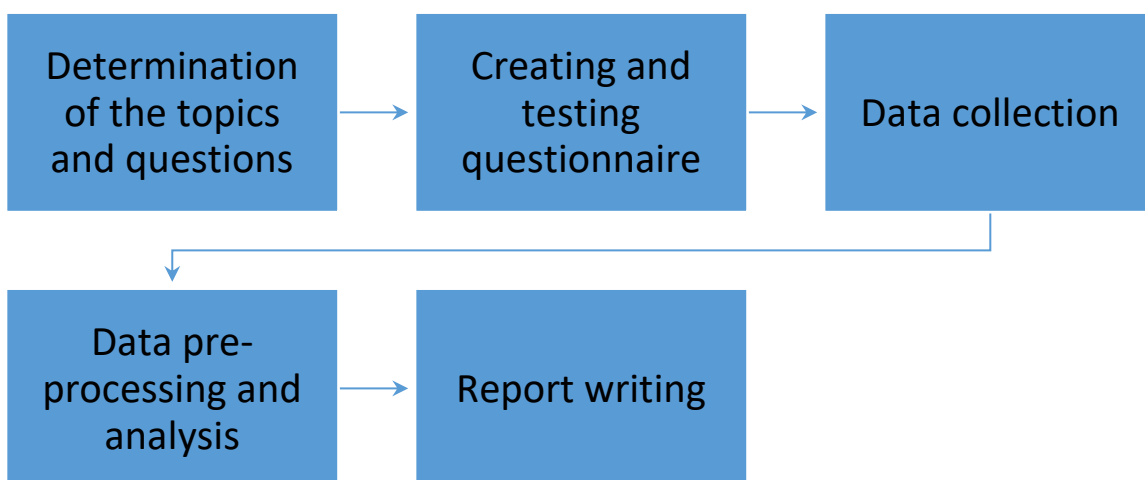
- Level of development: “The lower the score you give for the ‘Level of ...’ question the more effort we will put on helping you in that specific topic to build your business. The lower the specific level the higher the need of such assistance.”

In both cases, the bigger value meant a bigger importance / development level.

The third part of the survey is about risk management, where information was gathered about the used risk analysis methods of SMEs and start-ups with multiple choice-type questions.

Steps of the analysis

The diagram below shows the major steps and milestones of the analysis, based on which, partner could do the analysis.



As a first step in this work package is the determination of covered topics and questions were constructed. There were 30 questions in 7 topics, which provided valuable information for the gap analysis as well as in the creation of support packages. The topics were the following: Market and Customer, Organizational, Legal and IP Protection, Financial, Technology and knowledge, Infrastructure and Partnerships. These questions were discussed among the project partners (PPs) in online meetings, and this phase’s duration was approximately 2 months to ask questions with the best



outcome (as far as the analysis is concerned). These questions can be seen in the appendices part.

The online questionnaire creation, translation and test phases took approximately 1 week, and needed the resource of the partners. It means that everybody sought to find any possible typos or parts which could be skipped. The questionnaire should be submitted fully, there were no chance to skip any parts of it.

After the revision of the questions in the survey form, 3 months of data collection part came. The details of the data collection can be seen in the previous chapter, titled “Presentation of the measurement environment”.

After the closure of the questionnaire conduction, data pre-processing was necessary. This includes data recoding in order from text to dummy variables. The dummy variables can be seen in the appendices part of this report. Furthermore, transformation had to be carried out on the database to get the best result. For the pre-processing MS Excel were used. This activity required approximately 2 weeks from the University of Debrecen.

The analysis phase can be divided into 2 major parts:

- Firstly, the recoded dataset was processed via IBM SPSS 26. Descriptive statistics, frequency tables as well as visualization aids (histogram, boxplot, pie charts, etc...) were asked. In this session, the full database and subcategories separately were checked and analysed.
- Secondly, MS Excel’s pivot and pivot chart functions provided a dynamically changing table and chart. This support the project partners to carry out their analyses by filtering the dataset and check possible gaps.

As a last phase, the report writing is the last activity. Each country analysis was carried out by a project partner in which their company takes place. This is the most effective way to do the analysis, because the economic (either microeconomic or macroeconomic) background and situation are known for them.



General results (demographic analysis)

During the 3-month-long data collection period, 199 answers were gathered. However, 43 answers do not fit the scope of the project (they are large companies, while the focus is SMEs and start-ups), which entailed the exclusion of these responders from the analysis. After the data cleaning, there were 156 evaluable record.

The following table and chart present the distribution of the responders by countries and the type of the company (*Table 1. and Figure 1.*):

Table 1: Distribution of countries and type of company.

	Startup or SME?		Total
	Startup	SME	
Croatia	8	8	16
Hungary	25	37	62
Poland	23	18	41
Slovakia	15	6	21
Slovenia	12	4	16
Total	83	73	156

Source: Authors' calculation based on the questionnaire, 2020.

As a result, authors have to admit that the dataset is not representative in any of the aspects (this was not required by the project), however, these companies will be offered to participate in the business development trainings, so the questionnaire and thus, the project has achieved its goal.

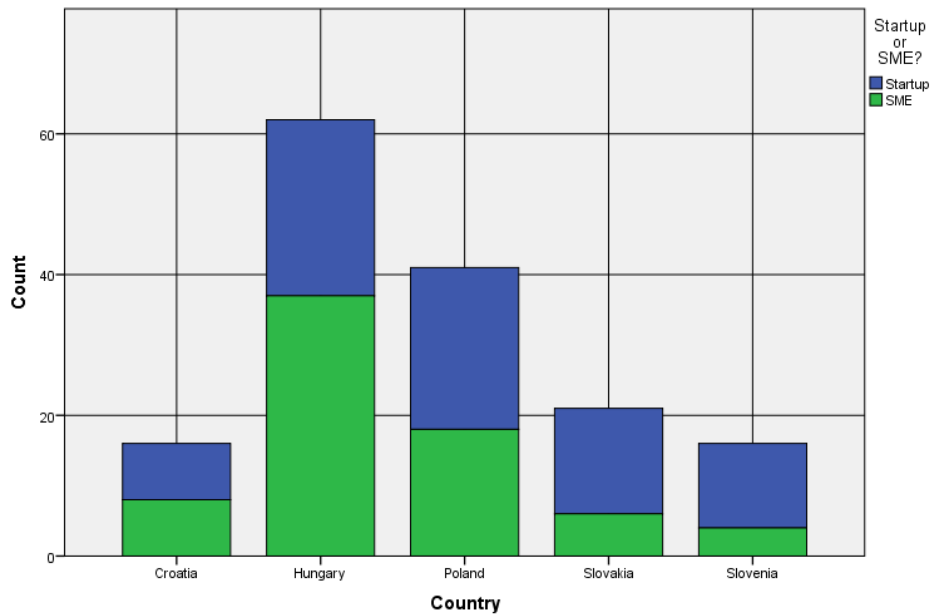


Figure 1: Distribution of the country and type of the company

Source: Authors' calculation based on the questionnaire, 2020.

As far other important factor is concerned, technology readiness level (TRL) is important to mention. This indicator presents the maturity of the technologies used by the companies during carrying out their operations. With the use of this indicator project partners have a good understanding about the responders' readiness for their technology. The levels are the following:

TRL 1 - Basic principles observed and reported

TRL 2 - Technology concept and/or application formulated

TRL 3 - Analytical and experimental critical function and/or characteristic proof-of concept

TRL 4 - Component and/or breadboard validation in laboratory environment

TRL 5 - Component and/or breadboard validation in relevant environment

TRL 6 - System/subsystem model or prototype demonstration in a relevant environment (ground or space)

TRL 7 - System prototype demonstration in a space environment



TRL 8 - Actual system completed and "flight qualified" through test and demonstration (ground or space)

TRL 9 - Actual system "flight proven" through successful mission operations

5 main maturity categories were created in the survey:

- 1: TRL 5 or below
- 2: TRL 6,
- 3: TRL 7,
- 4: TRL 8,
- 5: TRL 9.

The distribution of the responders' technology readiness can be seen in the following tables (*Table 2-3.*):

Table 2: Distribution of the Technology Readiness Levels among the responders

Country / TRL level	≤ TRL5	TRL6	TRL7	TRL8	TRL9	Grand Total
Croatia	6	0	2	3	5	16
Hungary	32	5	8	3	14	62
Poland	14	4	5	7	11	41
Slovakia	8	6	1	4	2	21
Slovenia	3	2	4	4	3	16
Grand Total	63	17	20	21	35	156

Source: Authors' calculation based on the questionnaire, 2020.

Table 3: Distribution of TRL levels by type of the company

TRL / Type of the company	SME	startup	Grand Total
≤ TRL5	22	41	63
TRL6	6	11	17
TRL7	9	11	20
TRL8	9	12	21
TRL9	27	8	35
Grand Total	73	83	156

Source: Authors' calculation based on the questionnaire, 2020.



A significant part of the responders think that they are somewhere below TRL 5 (63 companies), which can be titled as a good opportunity to the project partners to improve these companies' performance levels in this field. The second largest frequency relates to the TRL 9 level (35 companies), which indicates that a vast majority of the responders are having strong foundation in respect of the technology. The other companies selected levels between these two extreme values.

As a last, interesting factor, the revenue was under investigation. Most of the responders selected the second line of the revenue, which is 1-100 000 EUR. Other results can be seen in the following Table (*Table 4.*):

Table 4: Distribution of revenue by country

Revenue / Country	Croatia	Hungary	Poland	Slovakia	Slovenia	Grand Total
0 EUR	4	10	12	6	6	38
1 - 100 kEUR	5	19	19	12	7	62
10 kEUR - 2mEUR	0	3	0	0	0	3
10 mEUR - 50 mEUR	2	3	0	0	0	5
100 kEUR - 2mEUR	4	17	10	2	3	36
2 mEUR - 10 mEUR	1	8	0	1	0	10
50+ mEUR	0	2	0	0	0	2
Grand Total	16	62	41	21	16	156

Source: Authors' calculation based on the questionnaire, 2020.

The results presents that a bigger part of the responders are in a moderate financial condition (63 responders voted for 1-100 000 EUR), and many can admit that they are in a good financial condition (36 responders selected 100 000 - 2 000 000 EUR as a last year revenue), so 87% the responders have a revenue between 0 - 2 000 000 EUR, and very small amount of the companies (13%) can say that their earnings are over 2 million EUR.

Interesting statements related to the questions

The more detailed analysis can be found in the later chapters; however, many interesting conclusions can be drawn from the dataset regarding the topics. The factor



was the type of the company (SME or Startup), while the boxplot diagrams shows the distribution of the answers per category (see Figure 2.).

Explanation for the boxplot diagram:

- The highest point in the whisker represents the highest average value given for the category.
- The lowest point of the whisker shows the lowest average value given for the category.
- The upper point of the box demonstrates the upper quartile (Q3) in the dataset.
- The lower point of the box displays the lower quartile (Q1) in the dataset.
- The line in the middle of the box presents the median value (Q2) of the dataset.
- Point below the minimum point, or above the maximum point are called outliers. These are not “typical” responders, they differ from the “average” responders.

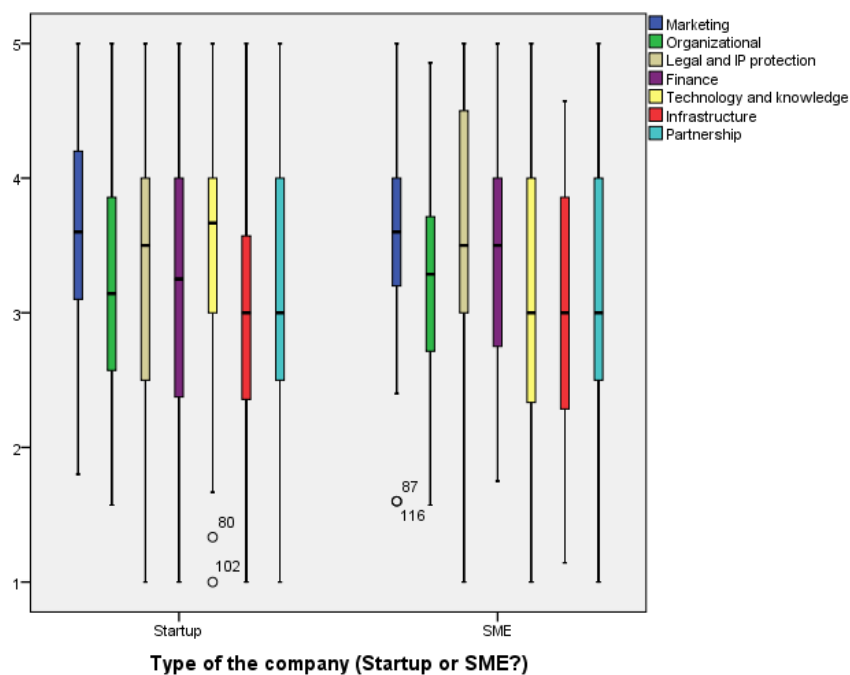


Figure 2: Boxplot for the average values of the categories by type of the company

Source: Authors’ calculation based on the questionnaire, 2020.



Statements worth mentioning can be found in the topic titled “Legal and IP protection”. Small and Medium-sized companies believe that they have more knowledge in this field than the Start-ups. As for the “Technology and knowledge” topic is concerned, start-ups are more confident about their knowledge than the SMEs. It is a bit contradictory taking the question related to TRL into consideration (see *Table 3.*). In the other fields, there is no significant difference, which means that both company types evaluate their level of development at approximately the same level.



Recommended modules for entrepreneurship development

Based on the specific results of the countries we recommend the following elements to be implemented into the Business Support Package, however there are differences among the statements of countries so local packages may vary.

Partnership with corporates

It refers to some other elements as well, like Infrastructure and Technology. Both SMEs and Startups see strong potential in partnership with corporates however they have minor expertise in how to do it properly. We recommend

- help (mentoring) to find common business interests and come to an agreement in cooperation with LCs,
- provide access to LCs manufacturing and distribution infrastructure,
- provide access to LCs infrastructure for piloting,
- organise events to let SMEs and startups meet LCs and share interests.

Technology

Mostly minor needs have been expressed. We recommend to

- provide access to a set of external resources to cover needs if any.

(See partnership for more details.)

Infrastructure

Massive needs have been found touching very different resources an SME or a startup may need. We recommend to develop strong links to LCs and other service providers in the following areas

- distribution,
- manufacturing,
- pilot scenes,
- co-working and training facilities,
- academic and research infrastructure.



(See partnership for more details.)

Market

We found a general need for better understanding the market having this feedback from most of the countries, so we recommend to

- build thorough training components on market definition, unique selling point development and
- apply mentoring for validation.

Legal

Both startups and SMEs have shortages in legal and intellectual property competences.

We recommend

- consulting and
- make external services

available throughout the business support package.

Finance

Regarding finance there we can identify some directions that will help both SMEs and startups:

- financial planning trainings
- controlling trainings
- (mostly for startups) skills to acquire external financial resources like VC investment.

Organisation

This topic brought the most diverse recommendations from countries, nevertheless the root of needs is common. We recommend to provide trainings in order to

- develop strategic thinking,
- derive action plans from strategy,
- develop management and interpersonal skills for execution.



We also see that in some cases it can be beneficial to

- improve access to temporary workforce capacities.

Specific results - based on the Countries (gap analysis)

Croatia

General information

After a long period of stagnation due to effects of the financial crisis, Croatia's real GDP per capita is showing increasing values in the last three years, reaching 11500 euro p.c. and real GDP growth rate reaching 2.9 % in 2017. First estimate shows that GDP in real terms increased by 2.9% in 2019, as compared to 2018. The largest positive contribution to the GDP in 2019 was realised by an increase in the final consumption expenditure of households and in exports of goods and services by enterprises in the section of Non-financial services. As compared to the previous year, the value of industrial products sold increased by 4.4%.

The structure of the business sector shows that SMEs and microbusinesses with 0-9 employees have accounted for 91% of enterprises in 2017. Croatian economy is dominated by traditional and low technology sectors and production and adoption and diffusion of key enabling technologies is low. Croatia is a moderate innovator, but, since 2010 performance has declined relative to EU.

Although R&D expenditure in Croatia is increasing and 50% of R&D expenditure is accounted for by the business sector, the expenditures are still below EU level because the largest numbers of researchers are employed in the higher education and government sectors (75%). The business enterprise sector R&D expenditure was 0.43% of GDP in 2017, compared with 1.36% of GDP on EU (28) level. In 2018, a total of 3.7 billion kuna was spent on research and development (R&D) activity, which was an increase of 17.8% compared to the previous year.

Source: Croatian Central Statistical Office. <http://www.dzs.hr>, data downloaded from the website 24th March 2020

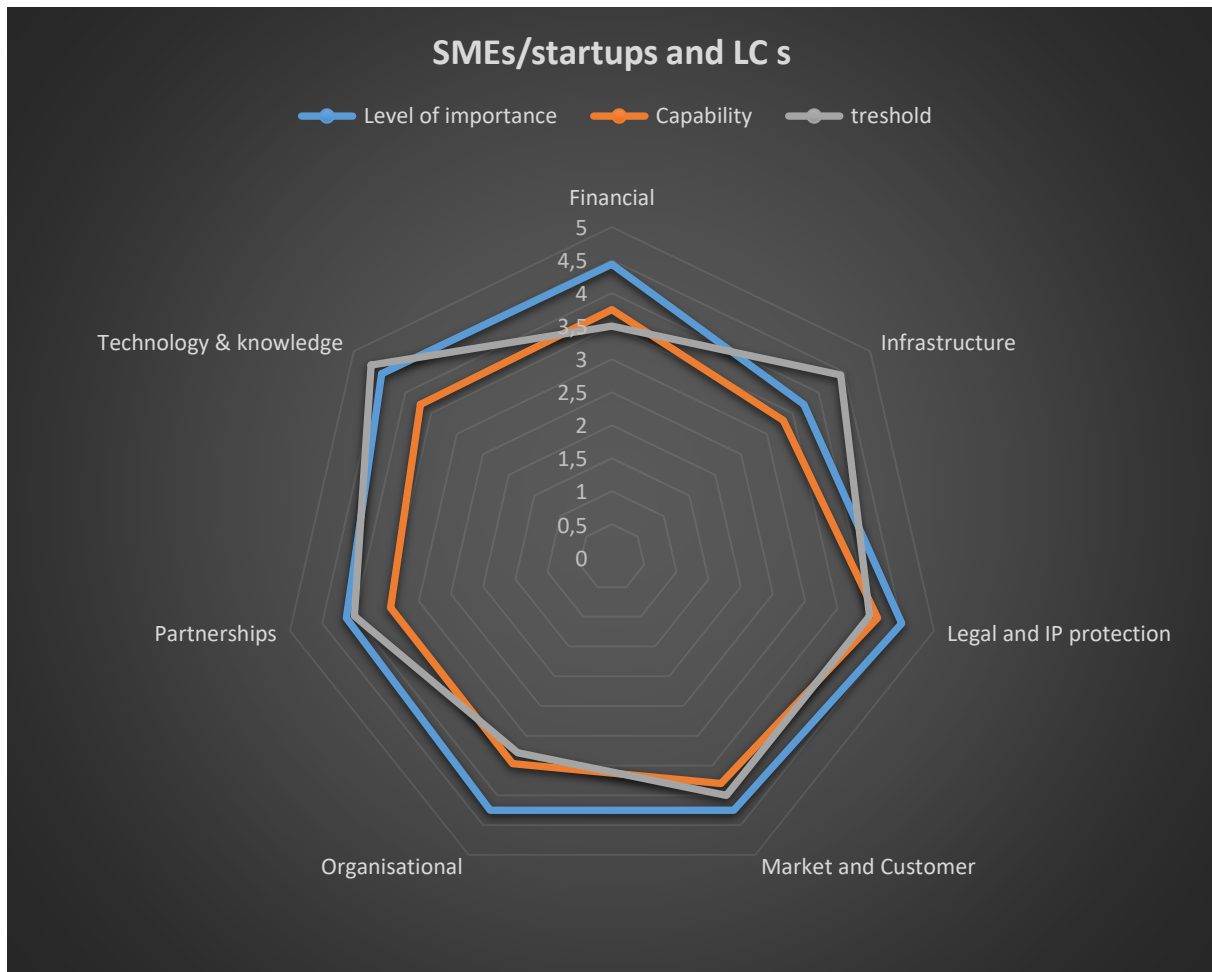


Gap Analysis

As a starting point for our analysis, we also looked at the needs and expectations of SMEs and Startups as supply side of innovation and large companies as demand side. In order to identify possible discrepancies between the two sides, we identified six categories based on the expectations of both parties (SMEs and Startups versus Large Companies). The survey was conducted using an online Google questionnaire. The questionnaire grouped the questions into six categories. The results of our research summarized below.

Empirical analysis

16 in Croatia located companies have completed our survey including 8 SMEs and 8 Startups. From the demand side of innovation five Large Companies have been questioned (one in each country of the project partners). The final goal of the current project is to support the partnerships between SMEs/Startups and Large Companies (LCs as follows) independently of their country of origin.



Spider Chart Croatia 1: Gap analysis SMEs, Startups and LCs (Source: own work of the University Debrecen Project Partner Team)

1. **Technology & knowledge category:** threshold of large companies is 4.66 while the current capability of SMEs and Startups is 3.60, but the rank the level of importance of the category is lower 4.29. As the threshold and the level of importance are quite close to each other, it could be a good opener for a successful partnership.
2. **Infrastructure category:** threshold of large companies is 4.42, while capability of SMEs and Startups is currently 2.94. SMEs and Startups would like to reach a higher level, so they have ranked the importance of this category at 3.68. As the difference between the valuing of the category is still serious. See our suggestions in the detailed analysis below.



In order to interpret the results it is important to examine in detail the major differences within the categories and to strengthen SMEs and Startups in these two categories - either by involving them in events that promote partnerships or supporting participation in projects. As next step, the project will develop an action plan to address the differences.

Week points in rank: (Necessary to develop and implement knowledge transfer on that fields.)

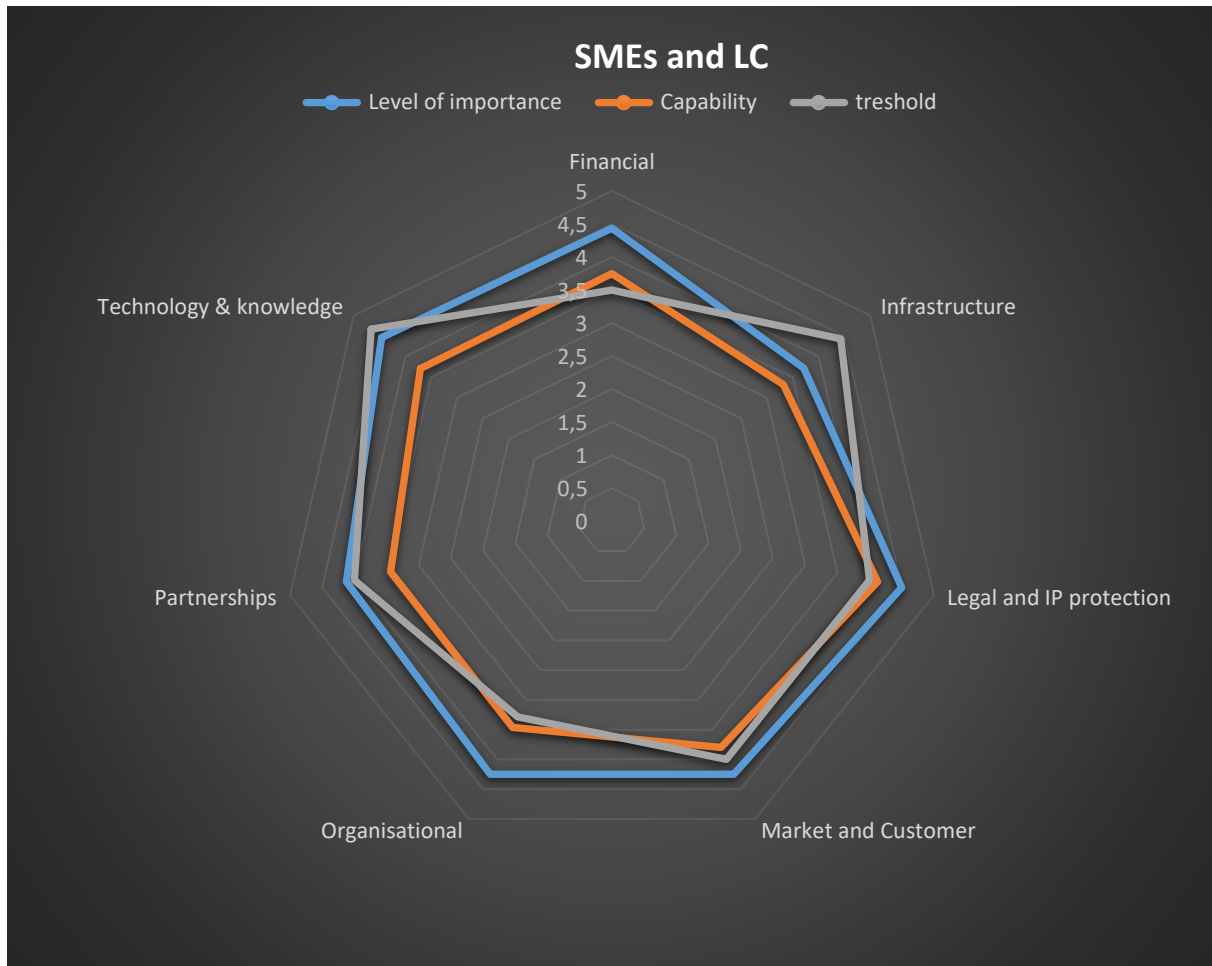
1. Infrastructure
2. Technology and Knowledge
3. Partnership
4. Market and Customer

Fields where the SMEs/startups have advantage (Not necessary to perform knowledge transfer)

1. Financial
2. Legal and IP protection
3. Organizational



SMEs



Spider Chart Croatia 2: Gap analysis SMEs and LCs (Source: own work of the University Debrecen Project Partner Team)

Category 1: Technology and knowledge

Performance

LCs (4.66) value technology and knowledge category nearly the same as SMEs importance is (4.45), but capabilities of SMEs are low, especially in "Access to IT technology" and "Access to research knowledge".

Suggested packages for development

It is worth looking at the differences between SMEs and Startups within this category. While Startups primarily need support in questions of expertise and research knowledge, SMEs need it mainly in IT technology.



Category 2: Market and Customer

Performance

The LCs value the market and consumer category (4.0) lower than SMEs importance level (4.25). The SMEs value their own capability in this category 3.8, and with that they fulfil the expectations of LCs. But in sub-category of "*Understanding competition*" we can see a gap between SMEs capability and expectations of LCs and that is the area where SMEs must have understanding of competition if they want to collaborate with LCs.

Suggested packages for development

Instead of investing in understanding and accurately identifying the market and the consumer, SMEs should invest more resources (time, money) and efforts in other areas where they fall far short of the expectations of LCs.

Category 3: Infrastructure

Performance

As we have already mentioned at the beginning of our analysis the "Infrastructure" is one of the categories, where the biggest differences between the LCs and SMEs/Startups expectations can be defined. LCs (4.42) value this category higher than SMEs (3.7). Within the category, we primarily asked companies about the access to different types of infrastructure.

Suggested packages for development

It is clear that SMEs need support in different types of Infrastructure. Companies could receive valuable information about the ways and means of accessing infrastructure through more than one area: co-working and manufacturing spaces, education, training, partner meetings and professional events.

Category 4: Organizational

Performance

The threshold of this category (3.28) is far below of those of the SMEs (3.46), level of importance is high (4.25). The SMEs overestimate the level of importance of this



category. To determine the main differences a more detailed analysis of the questions within this category is necessary. One of the most important question in the “Organizational” category for LCs is the “*Interpersonal relation among the shareholders*” of SMEs. Nevertheless question “*E-learning, electronically available materials*” is the main problem in this category for SMEs.

Suggested packages for development

Strategically common interest and good relationship of shareholders could be seen as a minimum guarantee of feasibility of SMEs. In developing the support packages, potential partnership should be into “E-learning” and “Accessibility to temporary”.

Category 5: Legal and IP protection

Performance

In this category, the expectations of large companies (threshold 4) and the level of capability (4.1) defined by SMEs almost coincide.

Suggested packages for development

SMEs are currently not reaching the desired level in question of “IP Protection”. Support: legal consultancy and/or education on patents and other legal, procedural issues.

Category 6: Financial

Performance

The financial expectation of LCs (3.5) is well below then capability or furthermore SMEs expectations (importance). It is evident that SMEs value their capability better than expectations of LCs, they are even higher than those of LCs.

SMEs rated the significance of this category on the scale 4.43. Within this category, the difference between the expected and fulfilled status of SMEs is observed in “*Financial resources covering the actual costs*”. At this point SMEs overestimate the importance of this category.

Suggested packages for development

In order to develop potential partnerships, it would be worth exploring this category further.



Category 7: Partnerships

Performance

LCs (4.0) value "Partnerships" more than SMEs, but if we look more in detail we can see that SMEs differ in need of partnership development. According to the difference between the level of importance and the capability the SMEs should be supported by *"Research and academic partnerships"*.

Suggested packages for development

Binding companies with research and academic partners should be facilitated through workshops and conferences.

Startups







Category 1: Technology and knowledge

Performance

Threshold of large companies is 4.66 while the current capability of Startups is 3.5, but the rank the level of importance of the category is also low 4.12. The current capability in Startups is expectedly low, but as the threshold and the level of importance are quite close to each other, this could be a good opener for a successful partnership to lift up the level of capability.

Suggested packages for development

While Startups primarily need support in questions of expertise and research knowledge, but also in IT technology. Innovation hub could be a good place to initiate the contact with LCs.

Category 2: Infrastructure

Performance

Threshold of large companies is 4.42, while capability of Startups is currently 2.57. Startups would like to reach a higher level, so they have ranked the importance of this category at 3.66., but that number is lower than the importance of SMEs. This is the category where the biggest differences between the LCs and Startups capability can be defined.

Suggested packages for development

Consultancy would be a valuable form to provide information about co-working infrastructure, manufacturing infrastructure, especially in meetings with venture capital companies and B2B meetings with LCs.

Category 3: Market and Customer

Performance

The LCs value the market and consumer category (4.0) lower than Startups (importance 4.2). The Startups value their own capability in this category 3.4, and with that they almost fulfil the expectations of LCs. But in sub-category of "*Understanding*



competition" and "Definition of company's Unique selling proposition (USP) and value proposition" we can see a larger gap.

Suggested packages for development

Startups in this category are in the similar situations as SMEs and they should invest more resources and efforts in other areas where they fall far short of the expectations of LCs.

Category 4: Organizational

Performance

The threshold of this category (3.28) is a little higher of those of the Startups (3.14), level of importance is high (4.07). The Startups overestimate the level of importance of this category. One of the most important question in the "Organizational" category is the "Accessibility to temporary" where we can see the largest gap between Startups and LCs.

Suggested packages for development

Potential partnerships between LCs and Startups should be defined and monitored during the pilot projects. In business two main supporting systems have basic influence on the success of a company, in one hand the organizational system and the system of processes. In taking in motion these two systems a committed leader role is determinant.

Category 5: Legal and IP protection

Performance

In this category the gap between the expectations of LCs (4.0) and the level of capability (2.3) defined by Startups is the largest one. One of the most important question is the "IP protection" of Startups and that category is where the Startups are the weakest and where they will need the most help to protect their business idea.

Suggested packages for development

Startups are currently not reaching the desired level by LCs. Support: legal consultancy and/or education on patents and other legal, procedural issues.



Category 6: Financial

Performance

The financial expectation of LCs (3.5) is higher than capability, but also lower than Startups expectations (importance). Startups rated the significance of this category on the scale 4.34., higher than other categories which can be expected in early stage of Startups life.

Suggested packages for development

If required financial trainings especially in controlling and planning could be offered for Startups to diminish the difference between the level of importance of this category and their current capability.

Category 7: Partnerships

Performance

LCs (4.0) value "Partnerships" more than Startups, but if we look more in detail we can see that Startups and LCs differ in need of partnership development. According to the difference between the level of importance and the capability the Startups and the value that LCs have, Startups should be supported by "Research and academic partnerships" and "Corporate partnership".

Suggested packages for development

Binding companies with research and academic partners should be facilitated through workshops and conferences.



Hungary

General information

In Q3 2019 the GDP of the European Union which is our tighter economic environment increased by 1.3% compared to a year earlier. The performance of the Hungarian economy has been steadily growing since 2013. The dynamic expansion of national investment continued to grow, providing an important pillar for increasing economic performance. The foreign trade surplus fell to EUR 3.9 billion. GDP volume in Q1-Q3 2019 increased by 5.1% compared to the high base of the year earlier. Developments in large companies have grown significantly. The volume of investments in Q1-Q3 2019 exceeded the base of the same period of the previous year by 18%. Small and medium-sized enterprises (SMEs as follows) play an important role in the Hungarian economy. While SMEs provided employment for nearly two-thirds of those employed in the business sector, they contributed 46% of added value, 42% of net sales and 30% of national investment in 2018. There were 2000 business research sites in Hungary in 2018. It is 24% more than last year. From 2017 to 2018, the number of R&D companies with fewer than 50 employees increased by 28%.

Source: Hungarian Central Statistical Office. <http://www.ksh.hu>, data downloaded from the website 8th March 2020

Innovation ecosystem

At the beginning of the year 2020 the Hungarian Government planned to spend 25% more (HUF 32 billion) on innovation than in 2018. The transformation of the institutional system supporting innovation has begun, the task of the designated institutions is to support the potential applicants. Last year, they decided on a grant of HUF 85 billion, which was called a significant sum. The National Science Policy Council was set up in 2020 as the body responsible. Its first meeting took place in mid-February, where the adoption of a national innovation strategy has been discussed. A new structure for grant funding has also been introduced, with all grant funds coming under one hand, managed by the National Research, Development and Innovation Fund. The Eötvös Loránd Research Network was established alongside the Bay Zoltán National Institute for Applied Research. The Ministry for Innovation is working to develop university-centric



innovation ecosystems to leverage additional resources for research and development. An important element of the ecosystem is the science-park concept, with six countryside parks under development and two in Budapest. The model for maintaining universities has also been redesigned to increase their competitiveness. A similar model is planned to be introduced at several other universities, which is the same as the Austrian financing form. (source: <https://www.origo.hu/gazdasag/20200107-palkovics-laszlo-uj-innovacios-korszak-indult-a-magyar-gazdasagban-a-kutatasban-es-a-felsooktatasban.html>)

Bence Katona, the Vice-Director of Hiventures said (source: <https://ivsz.hu/hirek/startup-okoszisztema-most-es-10-ev-mulva/>) in May 2019 that they expect a dynamic development of the innovation ecosystem in Hungary. In terms of the domestic situation, they calculated with a quantifiable development. (Satus May 2019 - where the current 300 company numbers increase to 3,000.) They have also expected that some of the companies so called "unicorns"(means major companies) grow into large companies.

In February 2020, everything has changed. The coronavirus presents new challenges for the humanity. As a result, the innovation ecosystem globally, including Hungary, is changing. Based on currently available information, the authors (Frankó, Budai, Pusztai, Kocsi) of this study assume that the future direction of innovation will be primarily medicine, biology, microbiology, genetics, food industry, biotechnology, pharmaceutical research, environmental protection (including green energy, recycling, industrial / medical waste processing / recycling). Environmental innovations may receive more emphasis in the future as industrial production is currently reduced (emergency situation), which also implies a reduction in the environmental impact of industry. However, the environmental impact of households has increased significantly. These include energy consumption (e.g. home office - or better *quarantine office*, and most household appliances are powered by electricity) and increased garbage. However, household waste does not only mean municipal waste, but also the increased amount of chemicals entering the wastewater and the contaminated material currently disposed of in municipal waste (e.g. paper towels, masks, rubber gloves, etc.). The treatment of



the latter is not currently required by the legal environment. (The use of double-walled plastic garbage bags is a common protocol.)

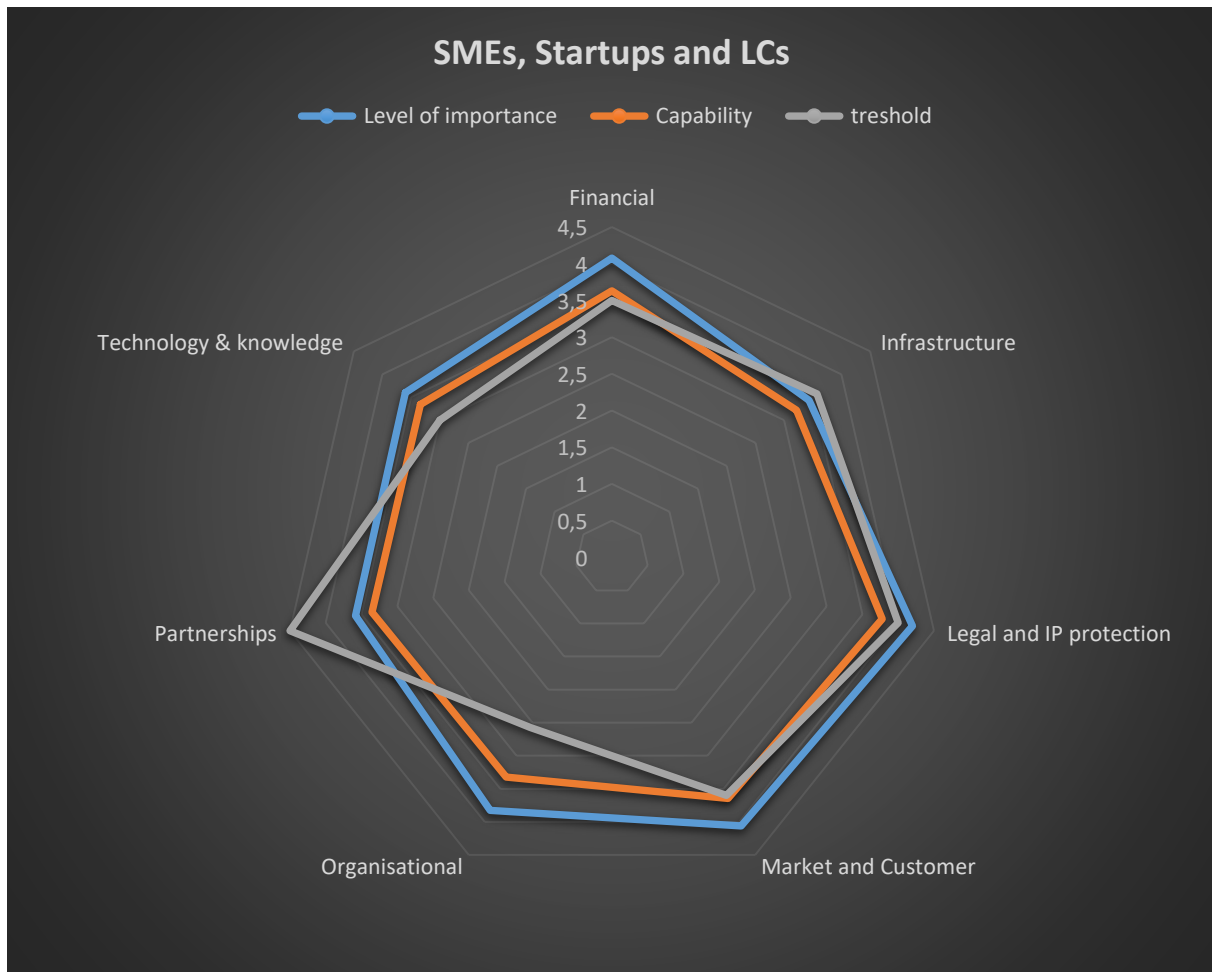
With all of this in mind, this analysis basically reflects the pre-emergency state of the world caused by the coronavirus. According to the authors (Frankó, Budai, Pusztai, Kocsi), it would be worthwhile to repeat the analysis in the second half of 2021. The authors assume that although global economic recession is expected over the next 2-3 years, government support for innovation will focus primarily on the areas listed above. By the second half of 2021, hopefully, the situation will stabilize somewhat and the framework for a new innovation ecosystem will become visible. Another important basis for reiterating the analysis is the extent to which current processes will reorganize the sphere of Startups and SMEs and the degree to which the innovation relationship of large companies will change.

Gap analysis

As a starting point for our analysis, we also looked at the needs and expectations of SMEs and Startups as supply side of innovation and large companies as demand side. In order to identify possible discrepancies between the two sides, we identified six categories based on the expectations of both parties (SMEs and Startups versus Large Companies). The survey was conducted using an online Google questionnaire. The questionnaire grouped the questions into six categories. The results of our research summarized below.

Empirical analysis

65 in Hungary located companies have completed our survey including 39 SMEs and 26 Startups. From the demand side of innovation five Large Companies have been questioned (one in each country of the project partners). The final goal of the current project is to support the partnerships between SMEs/Startups and Large Companies (LCs as follows) independently of their country of origin.



Spider Chart Hungary 1: Gap analysis SMEs, Startups and LCs (Source: own work of the University Debrecen Project Partner Team)

Measured on a Likert scale, both the level of importance and the capability of the SMEs and Startups differ from the expectations of LCs in the following categories:

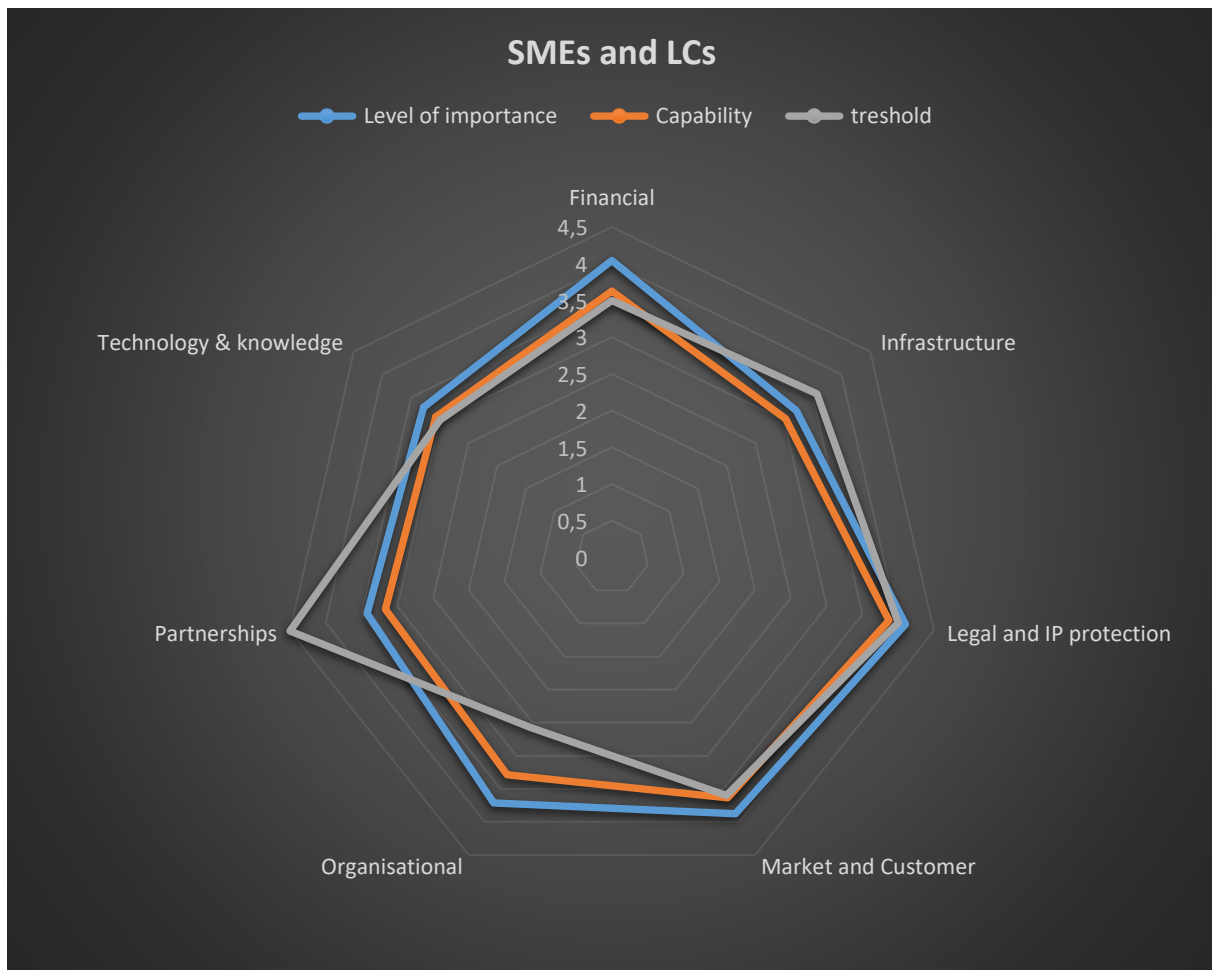
3. **Infrastructure category:** threshold of large companies is 3.57 while the current capability of SMEs and Startups is 3.21, but the rank the level of importance of the category higher 3.43. As the threshold and the level of importance are quite close to each other, it could be a good opener for a successful partnership.
4. **Partnership category:** threshold of large companies is 4.5, while capability of SMEs and Startups is currently 3.23. SMEs and Startups would like to reach a higher level, so they have ranked the importance of this category at 3.47. As the



difference between the valuing of the category is still serious. See our suggestions in the detailed analysis below.

In order to interpret the results it is important to examine in detail the major differences within the categories and to strengthen SMEs and Startups in these two categories - either by supporting participation in projects or by involving them in events that promote partnerships. As next step, the project will develop an action plan to address the differences.

SMEs



Spider Chart Hungary 2: Gap analysis SMEs and LCs (Source: own work of the University Debrecen Project Partner Team)



Category 1: Market and Customer

Performance

The LCs value the market and consumer category (3.6) lower than SMEs (importance 3.87). The SMEs value their own capability in this category 3.6, and with that they fulfil the expectations of LCs. LCs do not expect their potential partners to be fully aware of market and consumer or of their competitive situation or even of possible distribution channels. In these areas LCs can offer valuable, competitive support to SMEs.

Suggested packages for development

Instead of investing in understanding and accurately identifying the market and the consumer, SMEs should invest more resources (time, money) and efforts in other areas where they fall far short of the expectations of LCs.

Category 2: Organizational

Performance

The threshold of this category (2.57) is far below of those of the SMEs (3.71 level of importance and 3.28 capability). The SMEs overestimate the level of importance of this category. To determine the main differences a more detailed analysis of the questions within this category is necessary. One of the most important question in the “Organizational” category for LCs is the “Interpersonal relation among the shareholders” of SMEs. Strategically common interest and good relationship of shareholders could be seen as a minimum guarantee of feasibility.

Suggested packages for development

In developing the support packages the category should be divided into subcategories. A set of minimum requirements of potential partnerships between LCs and SMEs should be defined and monitored during the pilot projects.

Category 3: Legal and IP protection

Performance

In this category, the expectations of large companies (threshold 4) and the level of importance (4.1) defined by SMEs almost coincide.



Suggested packages for development

SMEs are currently not reaching the desired level by LCs. Support: legal consultancy and/or education on patents and other legal, procedural issues.

Category 4: Financial

Performance

The financial expectation of LCs (3.5) is well below their potential counterparts. It is evident that SMEs value their capability better than expected by LCs, furthermore their own expectations are even higher (importance) than those of LCs. SMEs rated the significance of this category on the scale 4.04. Within this category, the difference between the expected and fulfilled status of SMEs is observed both in financial planning and controlling. At this point SMEs overestimate the importance of this category.

Suggested packages for development

In order to develop potential partnerships, it would be worth exploring this category further and clarifying the reasons for the identified differences by obtaining qualitative data.

Category 5: Technology and knowledge

Performance

LCs (3) value technology and knowledge category nearly the same as SMEs capability is (3.06).

Suggested packages for development

It is worth looking at the differences between SMEs and Startups within this category. While Startups primarily need support in questions of expertise and research knowledge, SMEs need it mainly in IT technology.

Category 6: Infrastructure

Performance



LCs (3.57) value this category higher than SMEs (3.2 level of importance; 3.03 capability). Within the category, we primarily asked companies about the access to different types of infrastructure.

Suggested packages for development

It is clear that SMEs need support. Companies could receive valuable information about the ways and means of accessing infrastructure through education, training, partner meetings and professional events.

Category 7: Partnerships

Performance

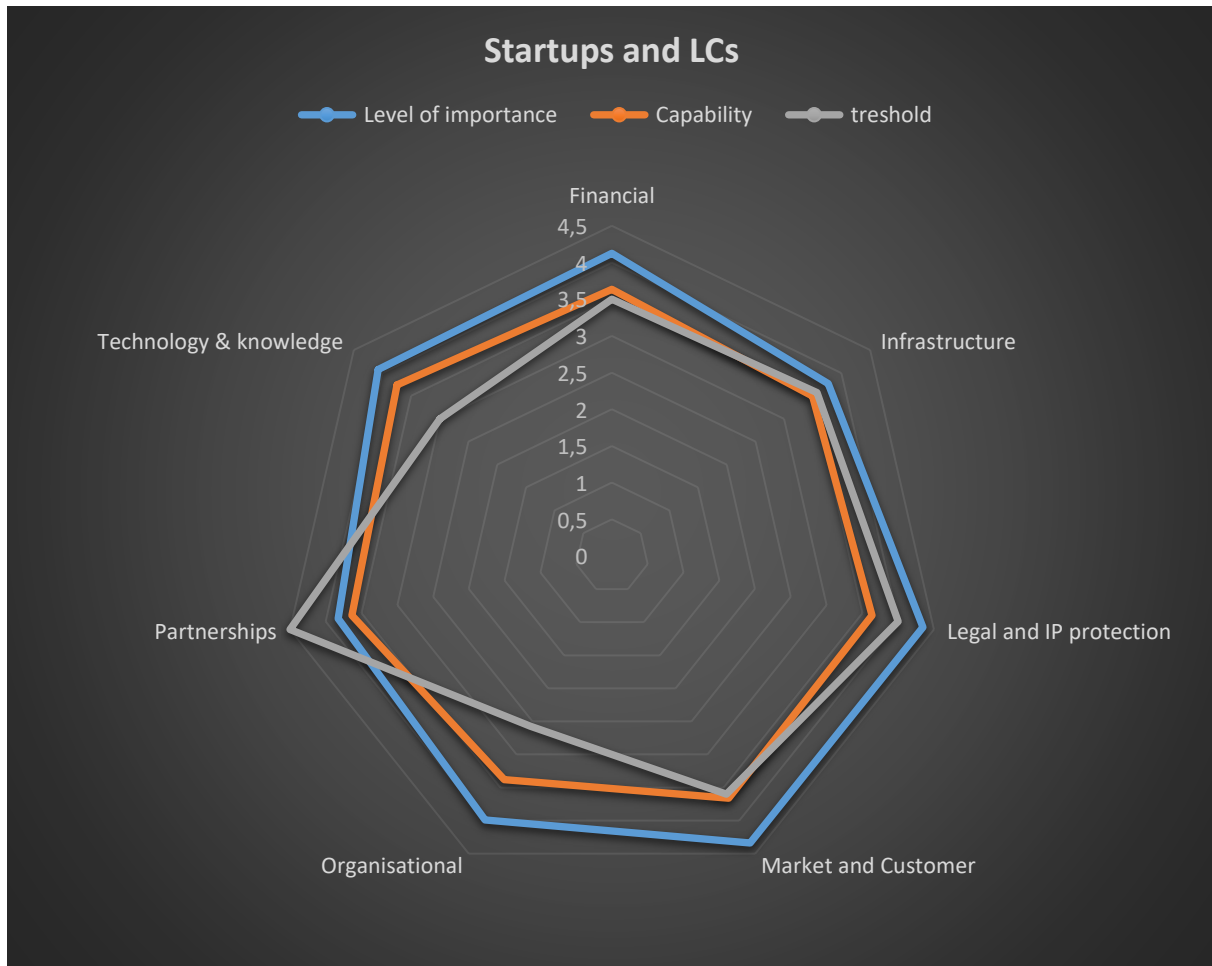
As we have already mentioned at the beginning of our analysis the “Partnership” is one of the categories, where the biggest differences between the LCs and SMEs/Startups expectations can be defined. If we look more in detail we can see that SMEs and Startups differ in need of partnership development. According to the difference between the level of importance and the capability the SMEs should be supported by corporate partnerships.

Suggested packages for development

Binding companies with partners should be facilitated through workshops, conferences, B2B meetings etc.



Startups



Spider Chart Hungary 3: Gap analysis Startups and LCs (Source: own work of the University Debrecen Project Partner Team)

Category 1: Market and Customer

Performance

The LCs value the importance of the market and consumer category (3.6) lower than Startups (importance 4.06). We have made the same statement in analysing the relationship between SMEs and LCs. LCs require an adequate-business knowledge, but not an extreme deepen one. LCs can offer valuable, competitive support to Startups.

Suggested packages for development



Instead of investing in understanding and accurately identifying the market and the consumer, SMEs and Startups should invest more resources (time, money) and efforts in other areas where they fall far short of the expectations of LCs.

Category 2: Organizational

Performance

The threshold of this category is far below (2.57) of those of Startups (3.8 level of importance). It is interesting that Startups value even higher the importance of this category than SMEs. Most probably, while Startups not necessarily have defined themselves as organizations and they are more a project team than an organisation. Within this category differences could be determined in the questions of e-learning support, management tools and partnership relations of shareholders.

Suggested packages for development

In developing the support packages the category of organizational should be divided into subcategories. Targeted development aims and tools and if possible personalized ones should be defined. In business two main supporting systems have basic influence on the success of a company, in one hand the organizational system (more dominant by SMEs) and the system of processes. In taking in motion these two systems a committed leader role is determinant.

Category 3: Legal and IP protection

Performance

In this category the expectations of LCs (threshold 4) and the level of importance (4.2), which is even higher than those of the SMEs almost coincide. But the capability of the Startups is below with 3.77.

Suggested packages for development

Startups are currently not reaching the required level by LCs. Support: legal consultancy and/or education on patents and other legal, procedural issues.



Category 4: Financial

Performance

In the financial category expectations of LCs (3.5) are well below their potential counterparts. Startups overestimate the importance of this category (4.07). Their capability (3.63) fulfil the requirements set by LCs.

Suggested packages for development

If required financial trainings especially in controlling and planning could be offered for Startups to diminish the difference between the level of importance of this category and their current capability.

Category 5: Technology and knowledge

Performance

LCs (3) value the importance of technology and knowledge category lower than Startups (3.6). Capability of Startups (3.34) stay under the threshold of LCs

Suggested packages for development

Startups primarily need support in questions of expertise and research knowledge. Workshops and conferences, innovation club meeting could facilitate the contact.

Category 6: Infrastructure

Performance

LCs (3.57) value this category higher than Startups (3.43 level of importance; 3.21 capability). It is interesting that Startups are closer to the expectations of LCs in that category than SMEs. We suppose that Startups as primarily project based entities determine infrastructure as their prior resource and a basic requirement of innovation. With this point, their competitiveness can be more attractive for LCs as those of SMEs.

Suggested packages for development

Consultancy would be a valuable form to provide information about R&D infrastructure, manufacturing infrastructure (others: meetings with venture capital companies, B2B meetings with LCs).



Category 7: Partnerships

Performance

As we have already mentioned at the beginning of our analysis the “Partnership” is one of the categories where the biggest differences between the LCs and SMEs/Startups expectations can be defined. Startups should focus on academic partnerships.

Suggested packages for development

Binding companies with partners should be facilitated through workshops, conferences, Academic2B meetings etc.



Poland

General information

As assessed by the World Bank Poland¹ is now among the fastest-growing economies in the European Union (EU). Household consumption, fueled by expected increases in budgetary expenditures, a tight labor market, and rising wages, continues to grow. This, together with continuing low interest rates and the execution of EU funds-related investments, will help sustain Poland's economic growth prospects in the near term.

The two main challenges ahead for Poland are a shortage of labor and expansionary measures encouraged by the political calendar.

The shortage of labour will eventually weigh heavily on potential GDP growth and be exacerbated by the early retirement of an increasing share of the workforce. Poland is at an advanced stage in its demographic transition; its working-age population is already shrinking and is forecast to further decline in the coming years.

A dense political calendar, with EU, presidential, and general elections taking place within one year, has inspired a range of expansionary policies. Proposed measures to increase social benefits, lower tax rates, and inflate the cost of pension payments will put pressure on public finances. Due to the political cost of reversing these policies, they will weigh on Poland's fiscal position.

According to preliminary estimates of Polish Central Statistical Office² gross domestic product (GDP) in the 4th quarter of 2019 was higher by 3.2% on year-on-year comparison against 4.9% in the corresponding quarter of 2018 (constant average prices of the previous year).

In the 4th quarter of 2019 seasonally adjusted gross domestic product (GDP) (constant prices, reference year 2010) was higher by 0.3% than in the previous quarter and 3.7% higher than in the 4th quarter of the previous year.

Seasonally unadjusted GDP (constant average prices of the previous year) was higher by 3.2% than in the corresponding quarter of the previous year.

¹ <https://www.worldbank.org/en/country/poland/overview> - access 30.03.2020

² <https://stat.gov.pl/en/topics/national-accounts/quarterly-national-accounts/gross-domestic-product-in-the-fourth-quarter-of-2019-preliminary-estimate,2,44.html> - access 30.03.2020



In the 4th quarter of 2019 the economic growth came mainly from domestic uses which growth was 2.2% compared to the previous year. It was lower than in the 3rd quarter of 2019 (the growth 3.3%). It resulted from the decrease in gross capital formation by - 0.2% (against the increase by 0.4% in the 3rd quarter of 2019). Final consumption expenditure increased by 3.2% and was lower than recorded in the 3rd quarter of 2019 (the increase by 4.0%). Consumption expenditure in the households sector rose by 3.3% and was lower than in the 3rd quarter of 2019 (the growth of 3.9%). The growth rate of gross fixed capital formation was higher than in the 3rd quarter of 2019 and amounted to 4.9% (against 4.7%).

However, with the outbreak of CoVID-19 pandemic economic situation of companies changes dramatically. The unprecedented market restrictions imposed on 25th and 31st March by Polish government in order to limit the impact of SARS-COV-2 virus on society and to protect it made most business closed and impossible to work, while others can only operate online.

This situation will impact all countries in the European Union and worldwide which will cause economic depression the scale of which cannot be yet estimated.

The surveys on which is the analysis is based on the situation which is precedent to the pandemic and therefore does not reflect current status of the innovative startups and SMEs in cleantech sector. It would be therefore necessary to conduct new surveys in order to adjust outcomes to entirely new situation.

Cleantech innovation situation in Poland

According to the EC Eco-Innovation Action Plan watch³ Poland is among countries that have scored persistently low in the European Eco-Innovation Scoreboard since 2010. In the 2017 edition, it came on 26th position among the EU countries with a score significantly below the EU average (59 out of 100). The country underperforms in four out of five scoreboard components, being particularly weak in R&D and innovation investments and early stage investments in green technologies as well as in economic activities related to eco-innovation. Development of eco-innovation in Poland has been

³ https://ec.europa.eu/environment/ecoap/poland_en



slow as the businesses have not been fully able yet to use the potential of the public funding (mostly from EU structural funds) to develop environmental technologies. The potential of eco-innovations is still underestimated. Many companies do not consider eco-innovations as a source of competitive advantage and do not perceive economic benefits of introducing eco-innovative solutions. The most significant barriers to eco-innovation in Poland are mainly of an economic nature, including high cost of implementation, difficult access to capital, uncertain return on investment and the weak system of economic and fiscal incentives encouraging eco-innovation. Other problems include insufficient knowledge on potential economic benefits from the implementation of an eco-innovation. Among the drivers, the most important are investment from EU and national sources in form of Operational Programmes and national priority programmes, as well as national regulations. In recent years, Poland started to develop a more comprehensive policy approach to support eco-innovative technologies and circular economy model. This includes a project of the Roadmap of Transformation towards Circular Economy (planned to come into effect in 2018) that proposes numerous actions to foster the development of circular economy in Poland, in particular addressing the areas of sustainable industrial production, sustainable consumption, bio-economy, and new business models. In this framework, current legislation will be analysed and modifications will be proposed to increase the implementation of circular economy in Poland. Other most recent significant instruments adopted include the National Action Plan for sustainable public procurement 2017-2020, an act on support to innovation followed by two laws on innovation that increase the public R&D funding effort, as well as a set of regulations and programmes to support development of electromobility in Poland.

Introduction to the analysis

The analysis for Poland is based on 41 questionnaires, 18 from SMEs and 23 from startups. The statistical evaluation of the questionnaires was provided by the University of Debrecen. The answers to the questionnaire were gathered in December 2019 and January-February 2020. The gathered data reflect situation of the subjects from this



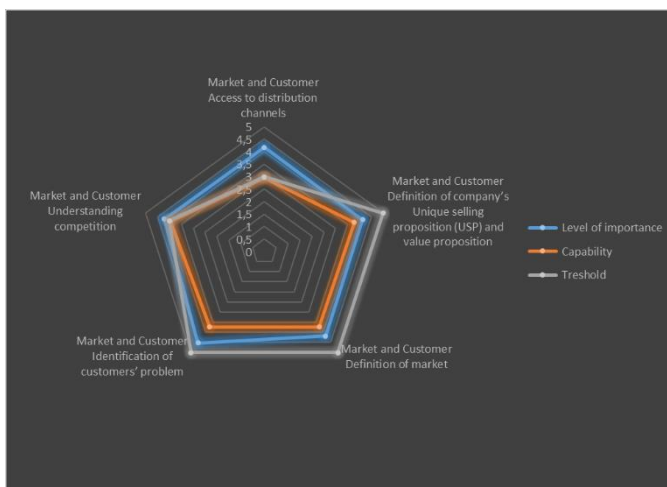
period. Packages suggested for development are responses for main deficiencies identified in the questionnaires.

Category 1: Market and Customer

Performance

For startups their competencies in the area are overall scored 3,63 while their expectancies and needs are evaluated at 4,24. The expectations of large corporates for this area are even higher - 4,4. Startups perceive access to distribution channels for their products and services as their weak point (scored 2,95), while their needs are much higher - 4,17. However, this is not of great importance for large corporates (score 3). It may be assumed that the LCs can provide distribution channels themselves. The examined startups payed great attention to the identification of customers needs (4,52) while assessing own competencies in this respect at 3,74. This aspect is also of crucial importance to the LCs (score: 5). Definition of company’s Unique selling proposition (USP) and value proposition is considered by the startups to be well developed (3,78 versus 4,13 needed), while LCs expectation are higher (5). It seems that startups do not need much assistance in understanding competition (self-assessed at 3,95, and expected to be at 4,22) - LCs assessed importance of the factor at 4.

Figure 1. Assessment of market and customer category for startups in Poland

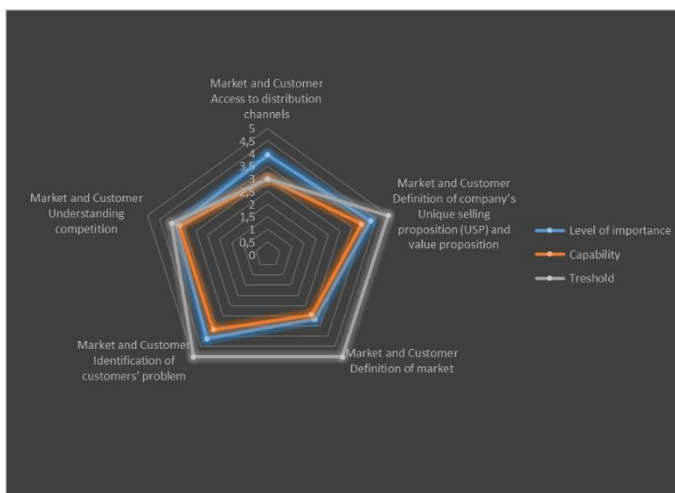


Source: statistical analysis by the University of Debrecen



In case of SMEs level of expectation by large corporates is the same as for startups (there was no differentiation for LCs into SMEs and startups) - 4.4. Overall expected importance was assessed at 3.85 while their performance was set scored at 3.43. Main gap between perceived importance by SMEs and LCs is in market definition (3.16 in general opinion of SMEs and 5 in opinion of LCs). Performance in the access to distribution channels is also considered low (3), while expected and needed level is 3,94. However, this is not a problem to the large companies. Understanding of competition is not considered to be a real problem for SMEs as the difference between performance and needs is small (0,11). Full comparison is visualised in the spiderweb chart below.

Figure 2. . Assessment of market and customer category for SMEs in Poland



Source: statistical analysis by the University of Debrecen

Suggested packages for development

While some problems of startups may be potentially solved by developing cooperation with large corporates (e.g. access to distribution channels) other need work. It is particularly important to work on Unique Selling Proposition which interrelates with understanding of customers needs and what competition can offer.

In case of SMEs it is necessary to provide support in defining the market.



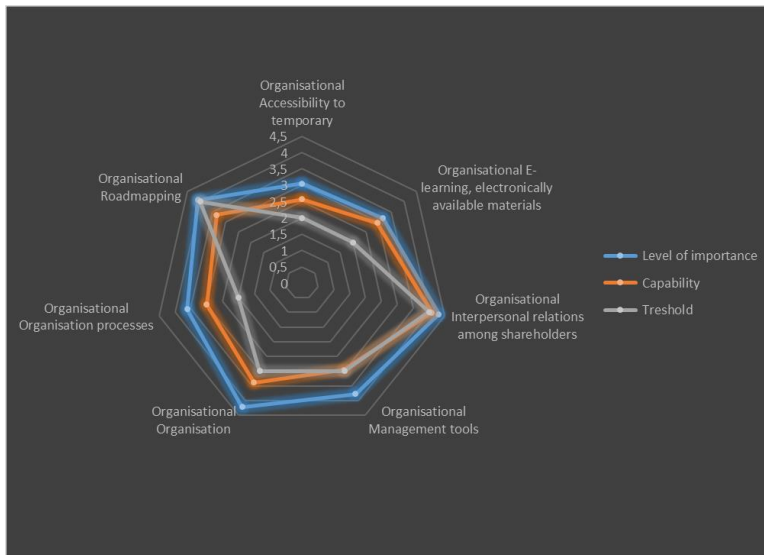
Category 2: Organizational

Performance

The overall competencies of startups in this category is 3.19, while declared needs are 3,75. The largest gap is in organisation which was self-assessed as 3.39 while value needed was set at 4.21. This means that startups consider their organisational status as underdeveloped, which is quite understandable. On the other hand expectations of the large corporates towards the this aspect is lower - 3. The necessary status of roadmapping is evaluated by both parties at almost same level: 4.09 by startups and 4 by LCs. Startups suffer also from insufficient access to managerial tools (performance: 2.95, needs: 3,78) and, to some extent lack of temporary workforce (performance: 2.56, needs: 3.04).

Large companies assessed this category as less important in most cases. It is therefore more important to startups to strengthen their organisation.

Figure 3. Assessment of "organisation" category for startups in Poland



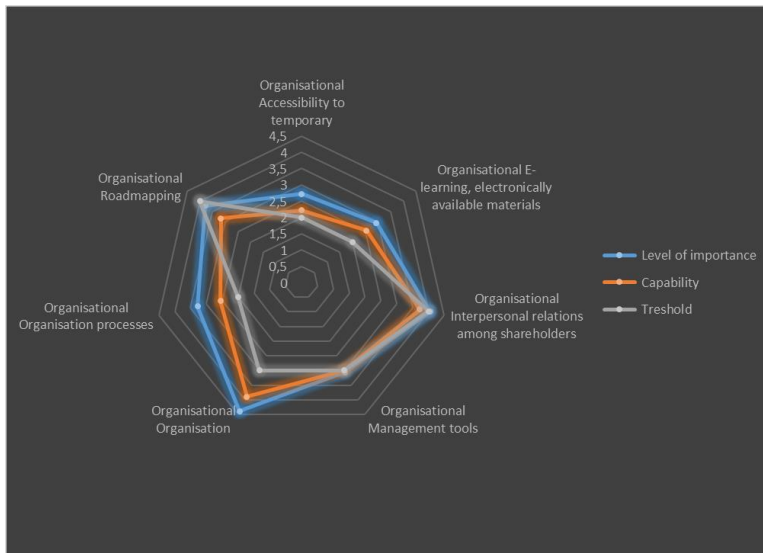
Source: statistical analysis by the University of Debrecen

Also in case of SMEs this category is more important for the SMEs themselves than for large corporates (SMEs level of importance: 3.4; LCs: 2.86). Only in one subcategory (roadmapping) expectations of LCs were higher than importance for SMEs (4 versus 3.78). The biggest gap is in organisation processes (0.72 of difference between level of



importance and actual performance). Roadmapping is another gap that needs to be addressed (by analogy the difference is 0.61).

Figure 4. Assessment of "organisation" category for SMEs in Poland



Source: statistical analysis by the University of Debrecen

Suggested packages for development

Tools that aim at strengthening organisational potential and managerial tools are necessary to be implemented. Startups have to learn lean management including management of workforce.

For SMEs the stress should be laid on the development of strategic planning and daily management of the organisation.

Category 3: Legal and IP protection

Performance

For innovative startups this category is of particular importance. Large corporate consider it also as most important (their score for the category: 4.5). There is large gap (0.87) between performance of Intellectual Property Rights protection (3.26) and level of its importance (4.04). This factor is crucial for development of innovative solutions. For SMEs IPR protection is not that important, but legal background although relatively not most important is characterised by gap of 0.67 (performance 3.05 against importance of 3.72).



Suggested packages for development

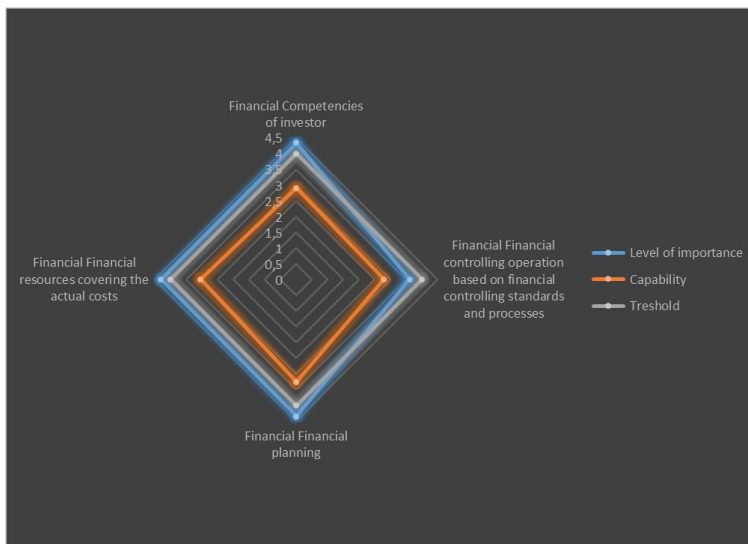
Startups need support in the process of protecting their intellectual rights and support schemes that would facilitate the process, while SMEs need legal education. In the latter case it can be considered only as additional activity, not crucial for support package.

Category 4: Financial

Performance

This category is considered crucial by startups. They assess their needs in this category very high - 4.15 while their capacities only to 3 (large gap of 1.4). Large corporates also assessed this category's importance high, but lower than startups (4). Most of subcategories are also characterised by large gaps that confirm importance of this category. For 3 out of 4 subcategories gap exceeds 1 which means large discrepancies between actual potential and needs. These are: competencies of investor (gap of 1.43), financial resources covering actual costs (gap of 1.26) and financial planning (gap of 1.08). According to the data startups suffer for financial survival, as money they have are hardly sufficient for survival of business.

Figure 5. Assessment of "financial" category for startups in Poland



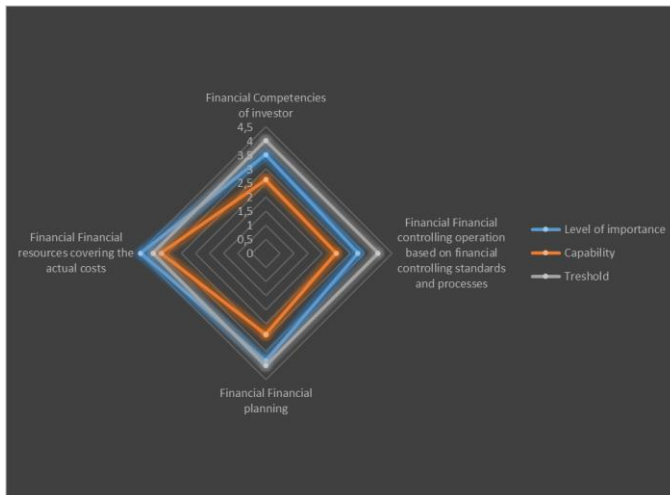
Source: statistical analysis by the University of Debrecen

The financial category is also important for SMEs. However, the gaps here, though also large are not that big. Overall capacity was assessed by SMEs to 2.93 and needs to 3.76,



while expectations of large corporates are at 4. Contrary to startups main gap is seen in financial planning (0.94) which may be connected with longer presence in market.

Figure 6. Assessment of "financial" category for SMEs in Poland



Source: statistical analysis by the University of Debrecen

Suggested packages for development

It is essential to provide startups with extensive training on finance and to develop their contact with potential investors and show them also other potential sources. However, the proper order must be kept as investors need to see adequate financial competencies for startups they are about to invest in. This category is most important for development of startups' skills.

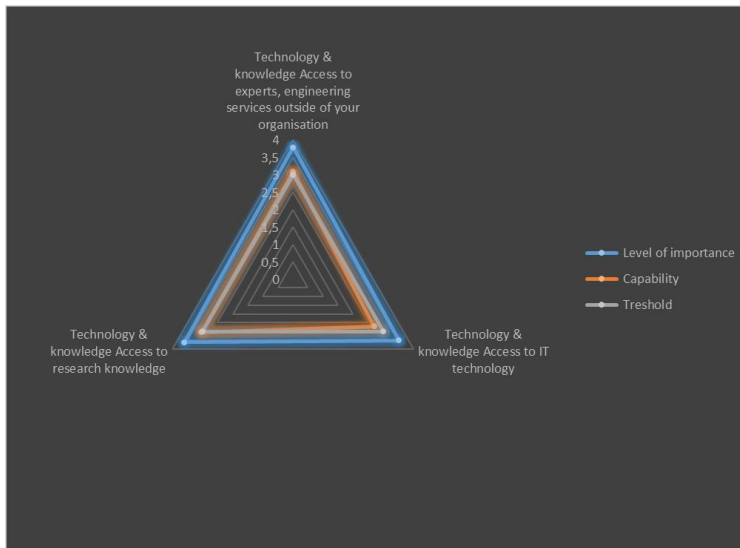
For SMEs it is important to provide guidance on financial planning and show them possible financing sources including investors.

Category 5: Technology and knowledge

Performance

In general the competencies of startups in this category (2.94) meet requirements of large corporate (3). However, needs of startups are higher - they are assessed at 3.64. Access to IT infrastructure (gap of 0.82) and Access to experts, engineering services outside of organisation (gap of 0.7). These aspect are particularly important for research activities of startups.

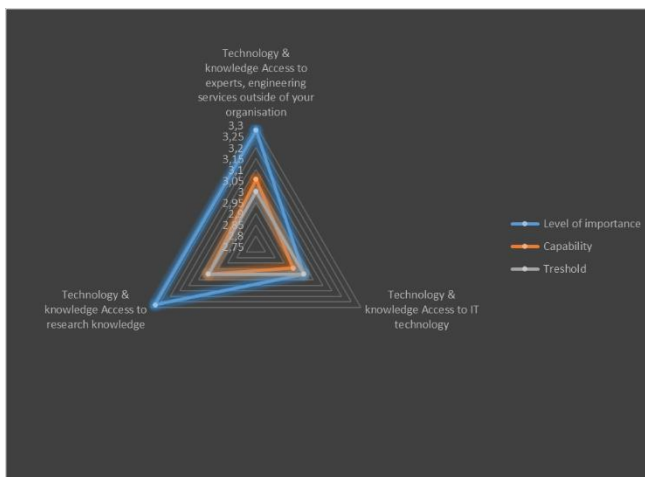
Figure 7. Assessment of "technology and knowledge" category for startups in Poland



Source: statistical analysis by the University of Debrecen

In case of SMEs there is no substantial gap visible in what the companies have already access to and what they consider important to develop. The differences do not exceed 0.3. Also expectations of large companies are met. The gaps visible on the chart below are actually small, they seem big only because of the scale.

Figure 8. Assessment of "technology and knowledge" category for SMEs in Poland



Source: statistical analysis by the University of Debrecen

Suggested packages for development

Possibilities of facilitating access to IT infrastructure and researchers for startups should be examined, e.g. technology parks, incubators etc.

There is no need to cover this category in the support package for SMEs.

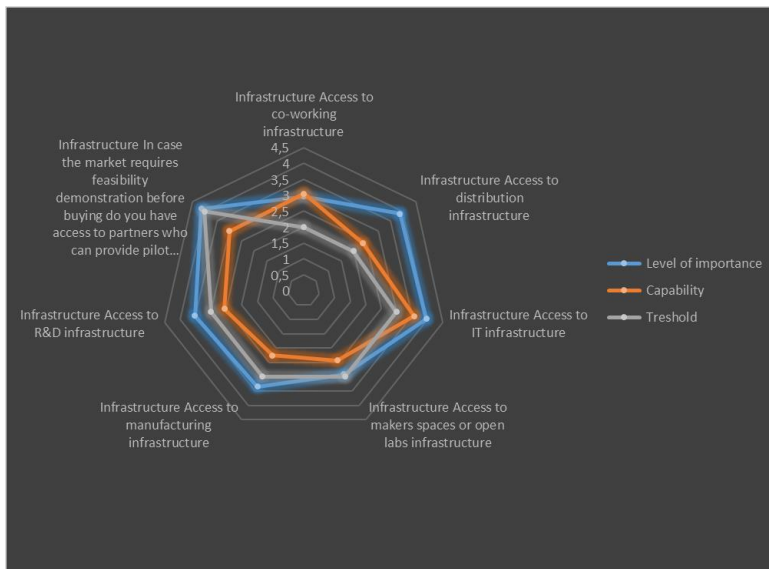


Category 6: Infrastructure

Performance

This aspect is not considered particularly important by large corporates (overall importance 2.86) for their cooperation with startups. On the other hand there are large gaps. Access to distribution infrastructure is particularly important gap - 1.47. This indicates that lack of distribution channels is crucial for development of startups. Other significant gap is lack of access to demonstration site to show feasibility of idea developed by a startup (gap of 1.13). Other important gaps also indicate early stage of business development - access to manufacturing infrastructure (expectations exceed possibilities by 1.08) and R&D infrastructure (gap of 0.96).

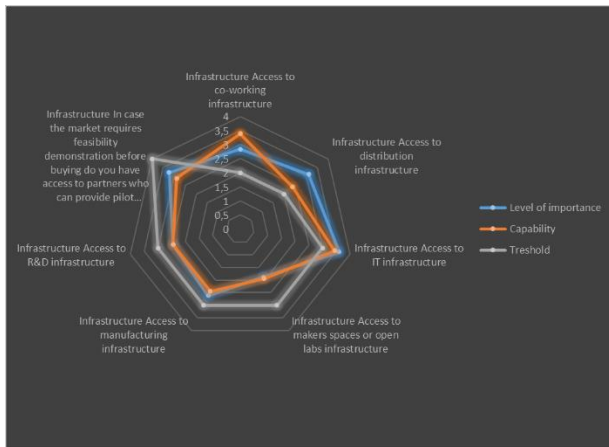
Figure 9. Assessment of "infrastructure" category for startups in Poland



Source: statistical analysis by the University of Debrecen

In case of SMEs, most likely due to fact that they are more established on the market than startups there is no particular gap between capacities (overall: 2.7) and needs (overall: 2.81) as well as expectations from large corporate (overall: 2.85). The most important aspect is access to distribution channels - the gap is 0.72.

Figure 10. Assessment of "infrastructure" category for SMEs in Poland



Source: statistical analysis by the University of Debrecen

Suggested packages for development

For startups instruments providing facilitation of access to infrastructure should constitute an important part of the business support package. This should include tools for closer cooperation with large corporates that have such infrastructure ready available, universities, technology parks etc.

The activities for SMEs should concentrate upon networking in the context of distribution and on other means of access to the infrastructure.

Category 7: Partnerships

Performance

The partnership was evaluated in the context of cooperation with large corporates and with R&D sector. In both aspects startups acknowledged a substantial gap (2.43 of declared corporate partnership development level versus 3.82 of importance and 2.65 of declared R&D cooperation level versus 3.26 of the needed one). Large corporates valued cooperation with them even higher (4) while cooperation in R&D moderately with score 3 (LC have their own research teams to work with startups).

SMEs do not perceive partnership as a big issue although there are gaps, specially visible in case of corporate partnerships (3.05 of actual engagement versus 3.61 of expected value).

Suggested packages for development

The main means to close the existing gaps for both startups and SMEs is development of tools for cooperation between startups and SMEs on one hand and large corporates on



the other. This will fit into the next thematic Work Packages of the project (WP T2 and WP T3).Slovakia

As a starting point for our analysis, we also looked at the needs and expectations of SMEs and start-ups as the supply side of innovation and large companies (LC as follows) as the demand side. In order to identify possible discrepancies between the two sides, we identified six categories based on the expectations of both parties (SMEs and start-ups versus large companies). The survey was conducted using an online Google questionnaire. The questionnaire grouped the questions into six categories. The results of our research summarized below.

20 in Slovakia located companies have completed our survey, including 6 SMEs and 14 Start-ups. 95 % of companies have less than 10 employees. From the demand side of innovation, five LCs have been questioned (one in each country of the project partners). The final goal of the current project is to support the partnerships between SMEs/Start-ups and large companies independently of their country of origin.

General information

From the answers, it is clear that the most important criteria for LC are “legal and IP protection” with overall score 5 followed by “market and customer” with score 4,8. On the other hand, the lowest focus of LC is “partnerships”. The start-ups/SMEs rank as the most important “market and customer” with 3,94 points while the least important “infrastructure” (3,2 points). Furthermore, start-ups/SMEs feel the most confident in “technology & knowledge area” (3,89 points) and the least confident in “infrastructure” (2,82 points). The most significant gap between the level of importance and start-ups/SMEs capabilities is in the are of “market and customer,” and it accounts for the 0.7-point difference. The most significant gap between LC expectations and start-ups/SMEs development is “IP and legal” area with a gap of 1.5 points.

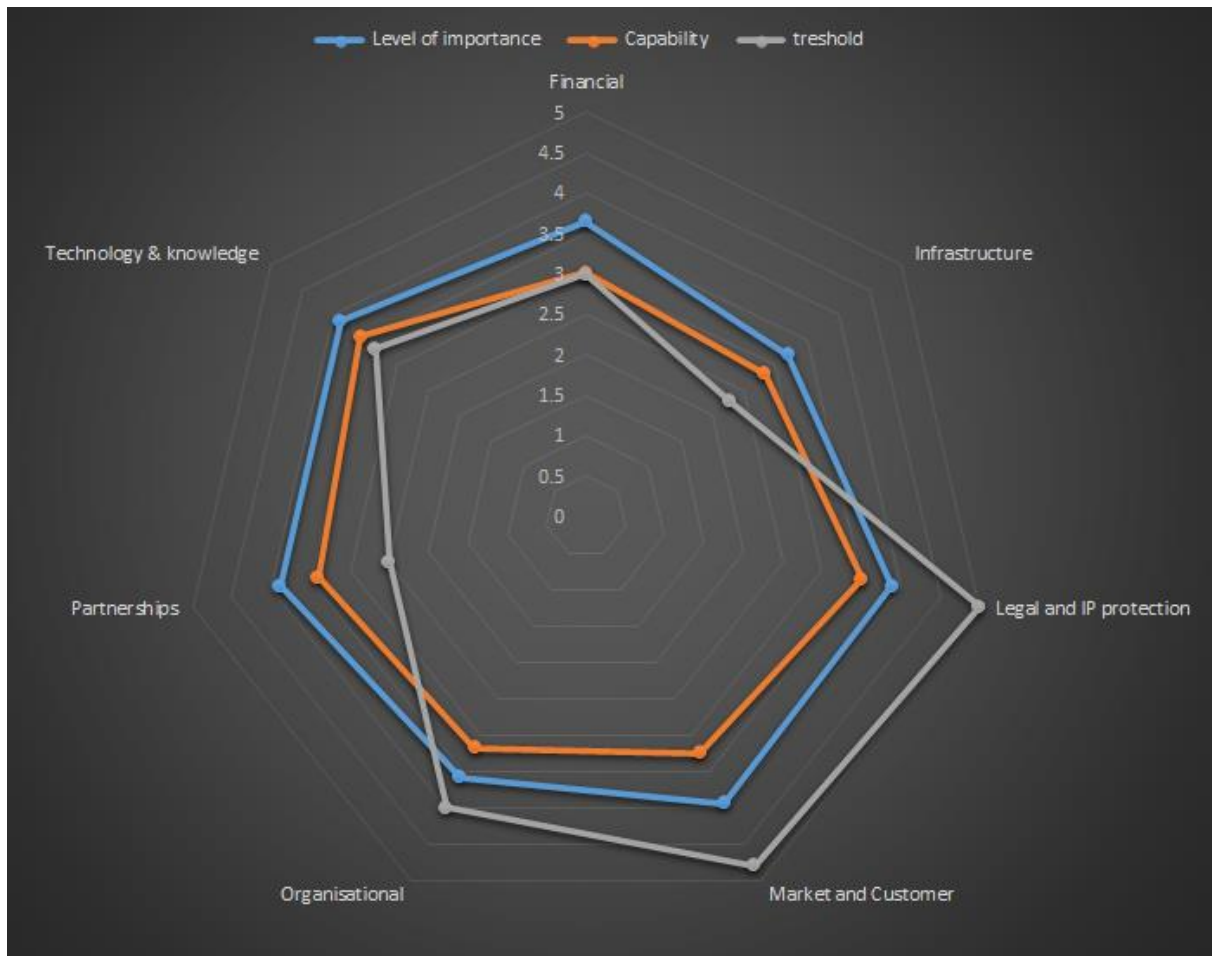


Figure 1: Overall gap analysis, Startups/SMEs and LC, Slovakia

Category 1: Market and Customer

Performance

After the closer look at the market and customer, we can see that the LC rated all sub-categories with the highest point 5 and only definition and of the market with rank 4. The same sub-categories are also of high importance for start-ups/SMEs. They rated USP and identification of customers' problems with the 4,1 points. However, they rated their USP identification capability level quite low, only 3.1, which creates a gap of 1 point.



Figure 2: Gap analysis, Market and Customer, Slovakia

Suggested packages for development

Both groups, LCs and start-up/SMEs, put a lot of emphasis on the market and customer area. Start-ups/SMEs consider it as one of the most important areas while accepting the lack of capabilities to deliver it.

The suggested package should combine developing hypotheses about the market and then testing it with potential customers. Through the iteration, start-ups/SMEs may better understand customer needs and define their unique selling point. LC can, in this area, provide valuable feedback for start-ups/SMEs.

Category 2: Organizational

Performance

The organizational category shows a disparity in the sub-categories' expectations on the LC site. While the company rated organization road mapping, accessibility to the temporary workforce, and available e-learning as extremely important, it also rated processes as un-important and management tools and interpersonal relations with point 3. Start-ups/SMEs ranked organizational category as one of the lowest in both terms, the level of importance as well as capabilities. They, however, stress out the importance



of interpersonal relations among shareholders (4,14 points). The most substantial gap between the level of importance and capabilities is in the road mapping sub-category (0,6 points).

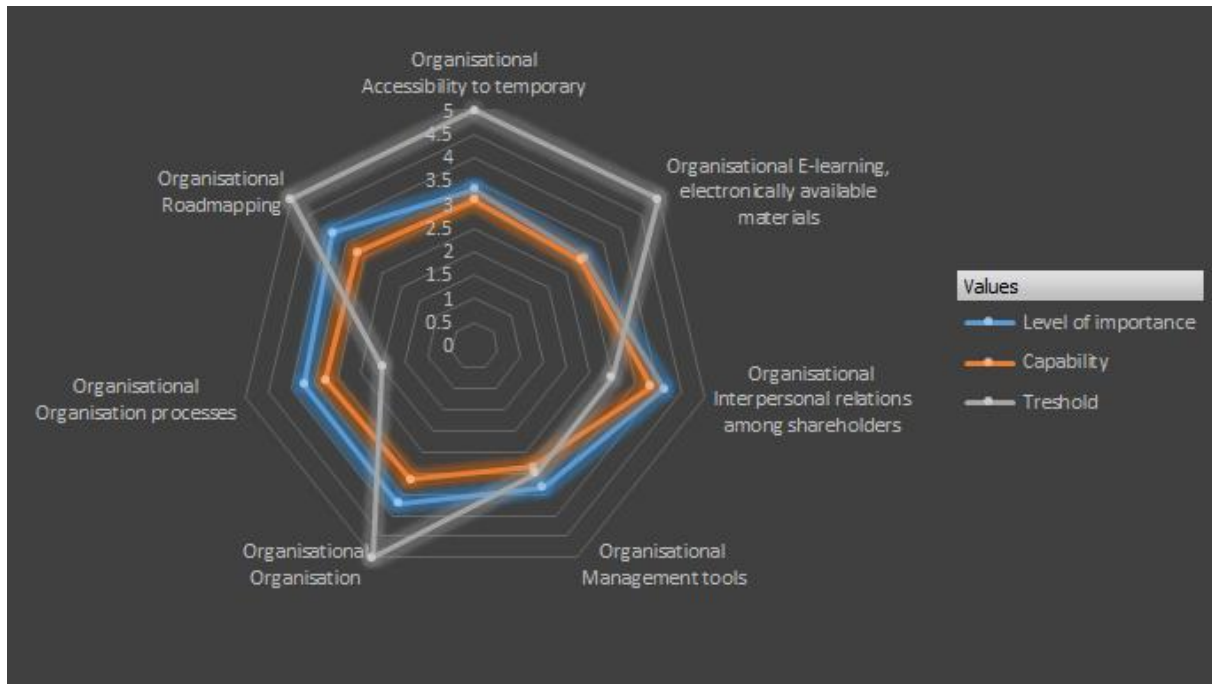


Figure 3: Gap analysis, Organizational, Slovakia

Suggested packages for development

The focus of the package should be on road mapping. The start-ups/SMEs, as well as LCs, put a lot of emphasis on the sub-category. Furthermore, start-ups/SMEs would welcome the improvement of their interpersonal skills to improve the relations with stakeholders. Throughout the course, start-ups/SMEs should also have access to a temporary workforce and E-learning materials.

Category 3: Legal and IP protection

Performance

The legal and IP protection is of extreme importance for LC (5 points). Start-ups/SMEs rated it also high (3,8) while their capabilities are below, at 3,3 points.

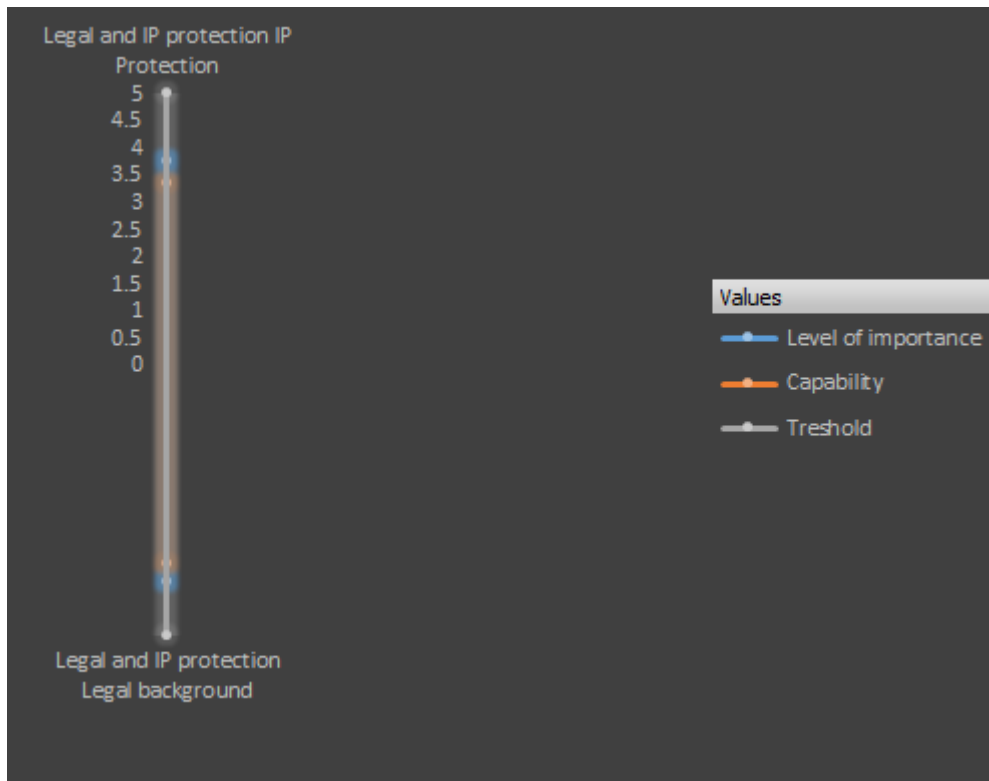


Figure 4: Gap analysis, Legal and IP protection

Suggested packages for development

Besides having a general introduction to IP/legal, it may be beneficial for start-ups/SMEs to have access to IP lawyers. The potential solution is in the form of mentoring hours with the lawyer or “coupons” for services.

Category 4: Financial

Performance

The financial category received the second-lowest score from LC (3,6 points), which consider an important only sub-category of “covering actual costs”. On the other hand, LC doesn’t recognize as important, having competencies of an investor at start-up. Start-ups/SMEs consider as important “financial planning” with score 3.9 points while rating their capabilities at the level of 3,1 points. That generates a considerable gap of 0,8 points.

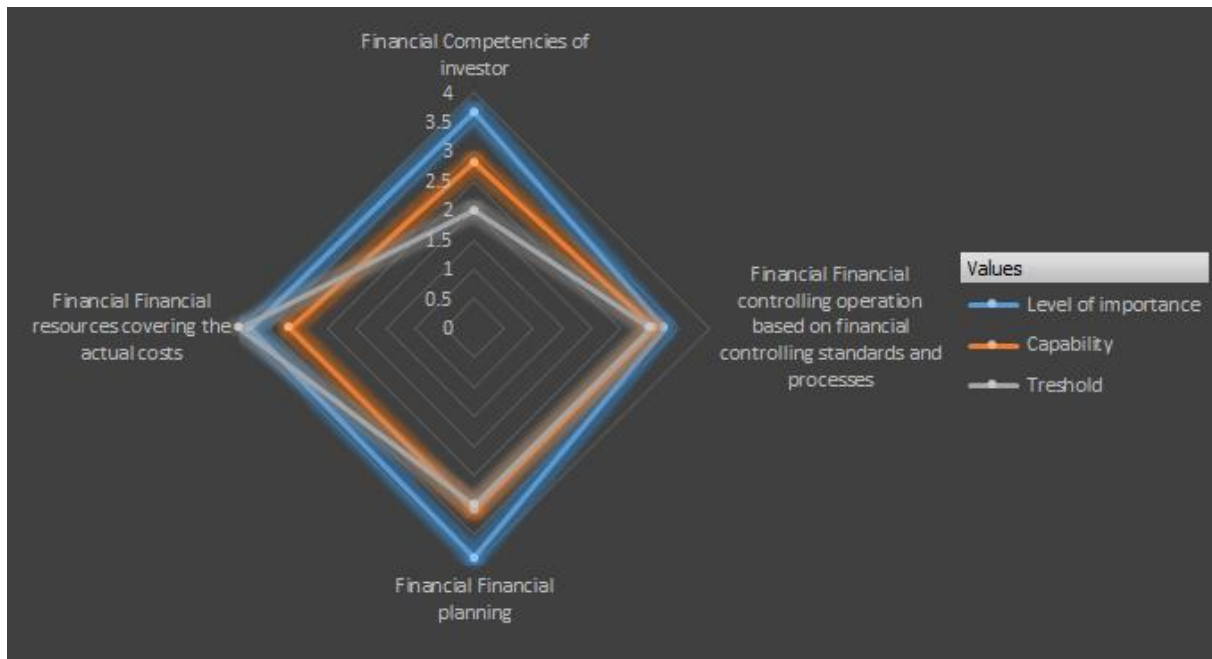


Figure 5: Gap analysis, Financial competencies

Suggested packages for development

From the start-up/SME perspective, the focus should be on financial planning and literacy. The course should contain some theory as well as testing the understanding on their concept. For the LC, the start-ups must have enough resources to operate. The possible development can be to help start-ups realize what the financing options are and how to choose the best one. The program should however, also connect start-ups with potential investors.

Category 5: Technology and knowledge

Performance

LC considers access to both the research knowledge and IT technology as important (4 points) and access to experts outside of their organization as less important (2 points). Start-ups/SMEs feel quite confident in this area with rating their capabilities at 3,6 points and the level of importance 3,9 points.

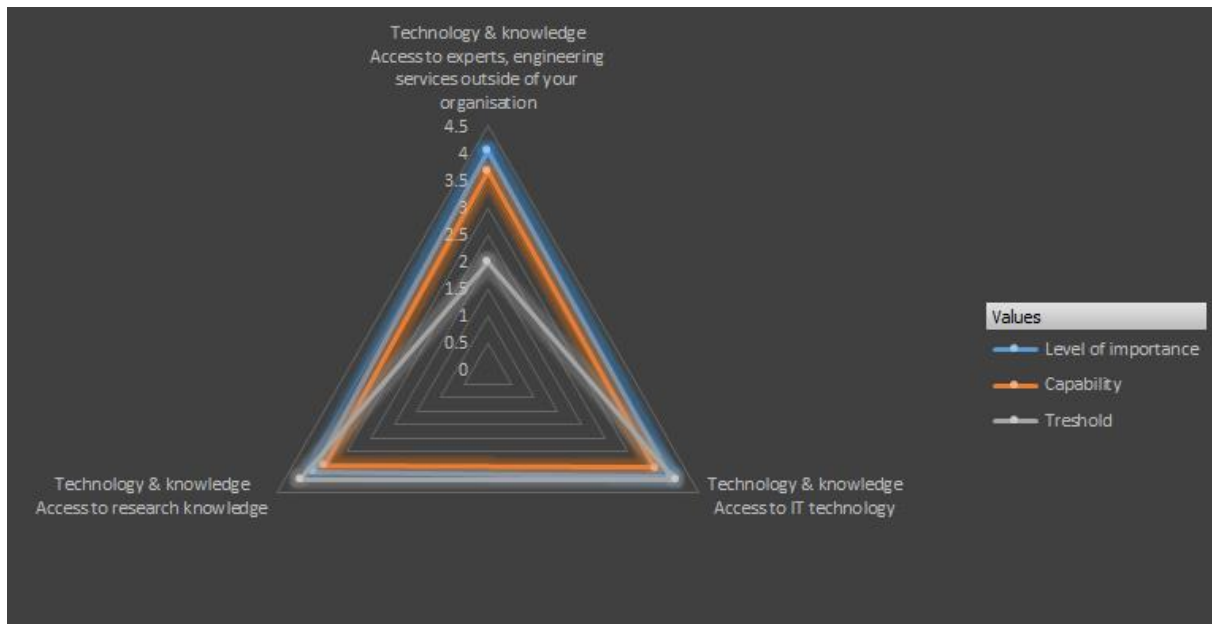


Figure 6: Gap analysis, Technology & knowledge, Slovakia

Suggested packages for development

The support package can support start-ups/SMEs by expanding its existing network.

Category 6: Infrastructure

Performance

The infrastructure rates the lowest among all parties LC (2,28 points), the level of importance for start-ups/SMEs (3,2 points) and their capability (2,82 points). The only exception is access to infrastructure, which has the level of importance for start-ups/SMEs and LCs at almost the same level, 4 points. The start-ups/SMEs, however, consider as important also access to distribution infrastructure (3,5 points).

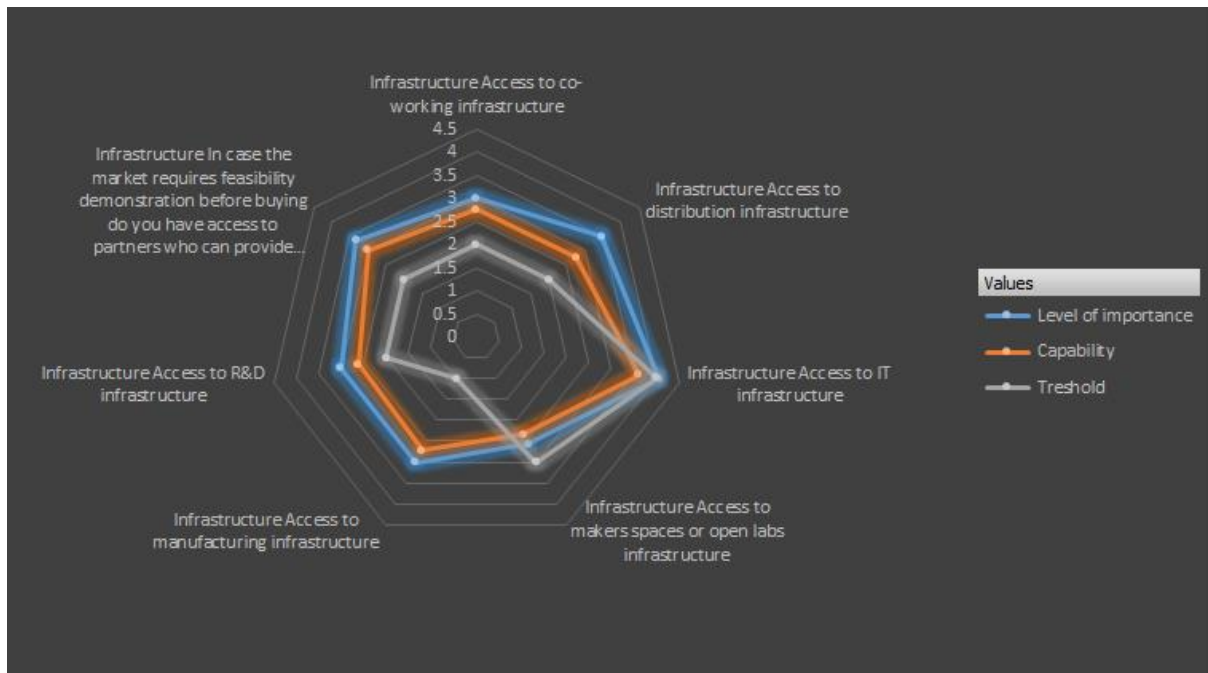


Figure 7: Gap analysis, Infrastructure, Slovakia

Suggested packages for development

The focus of the support package should be on helping start-ups/SMEs to access the critical IT infrastructure as well as distribution infrastructure. It can be done by “coupons,” an exclusive agreement with IT providers, or by expanding their network.

Category 7: Partnerships

Performance

The previous corporate partnerships are not important for LC (2 points) however, they are ranked as important for start-ups/SMEs, 4,2 points. The academic partnerships were evaluated with 2 points, while for the start-ups/SMEs it was 3,5 points. There is, however, a bigger gap in the capabilities as the start-ups/SMEs ranked them with the average of 3,33 points.

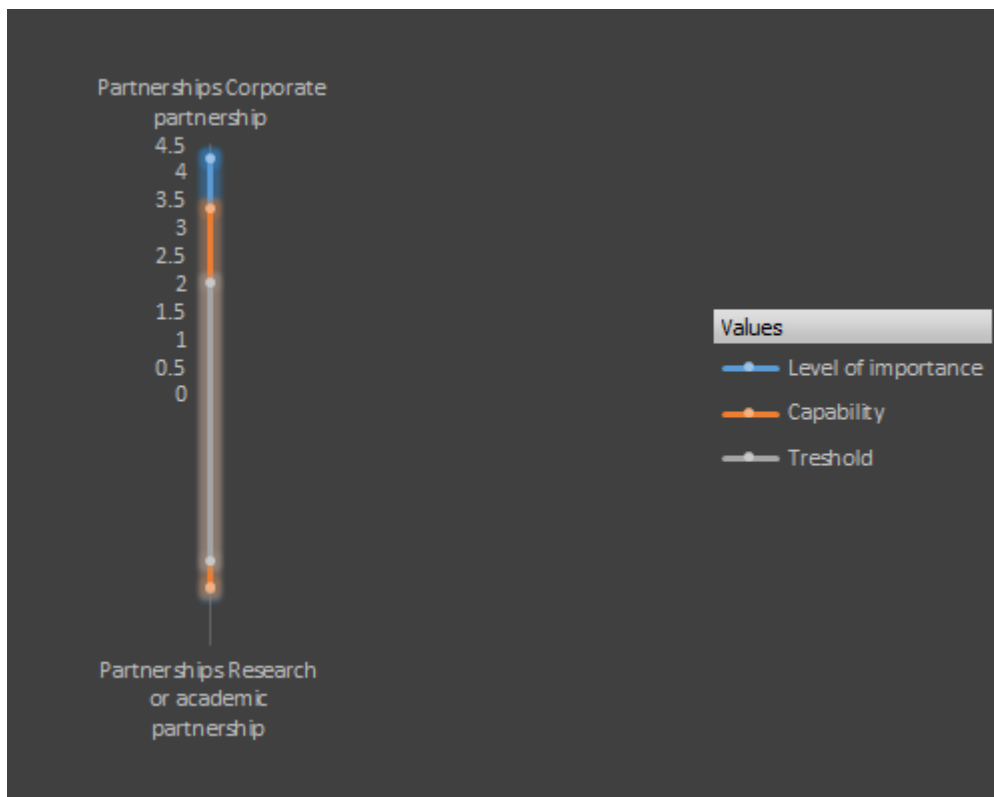


Figure 8: Gap analysis, Partnerships, Slovakia

Suggested packages for development

The package could help start-ups/SMEs to develop a corporate partnership, for instance, through match-making events.



Slovenia

General information

As this report is starting to take its final form, the crisis caused by the COVID-19, has already started wide spread predictions about the next big recession. Not even two weeks ago, all the indicators about the Slovenian Economy were more or less positive. UMAR (Institute of Macroeconomic Analysis and Development) had predicted a stable economic growth of around 3% in autumn 2019. Then, on March 12 2020, Umar lowered the forecasted growth to 1,5%, explaining that this year's economic growth will be significantly lower than first projected as the economy is crucially affected by the speed of the new coronavirus spread and government measures to contain it. By March 23 2020, UMAR again changed its forecast, predicting recession of about -5% or more, depending on the situation.

We can unfortunately expect similar trends in other economic indicators, and hence the data presented has to be taken with that in mind.

The statistical office of Slovenia (STAT) reported that compared to December 2019, at the end of January 2020 there were 0,7% fewer persons employed in Slovenia. However, the number of self-employed rose by 1,4% during the same period. Compared to January 2019, the number of employed persons increased by 1,6%. In February 2020 STAT reported that the 4% unemployment rate of the Q4 for 2019 was at the lowest point in twenty years.

Enterprises with at least 20 employees invested EUR 5,942 million in new and existing fixed assets in 2018, which is 19% more than in the previous year. Compared to 2017, investment in manufacturing grew by 22%.

In the 2008-2018 period investment in fixed assets was the highest in 2008, when it amounted to EUR 6,731 million, and the lowest in 2011, when it amounted to EUR 4,302 million. However, investment has not yet reached the 2008 level; it was still 12% below. For the first time since 2012, investment in fixed assets in 2018 again grew by two-digits over the previous year (in 2012 it went up by 12%).

SMEs represent roughly 136.000 or 99,8% of all enterprises in Slovenia, employing more than 70% of all active employees and generating about $\frac{3}{4}$ of all added value in the



Slovenian Economy. They also generate about half of Slovenia's export. Out of those STAT reports 1147 fast growing companies in Slovenia. There is no official statistics regarding the startups as they are counted in the category of SMEs.

Source: The statistical office of Slovenia. www.stat.si. Data accessed on March 24 2020. Institute of Macroeconomic Analysis and Development. www.umar.gov.si Data accessed on March 24 2020.

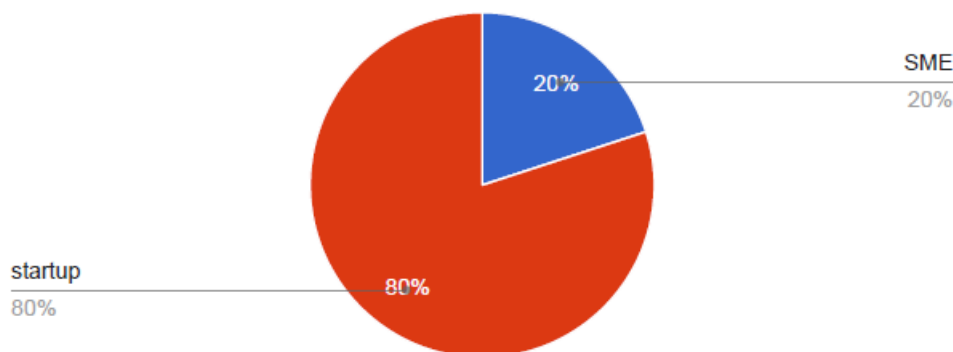
Gap analysis

The analysis is based on 16 answers from Slovenia.

In the first place, this analysis offers an insight into the identified gaps between the assigned importance and development in one of the six categories. The categories researched were the following: Financial, Infrastructure, Legal & IP Protection, Market & Customer, Organisational, Partnerships, and Technology & Knowledge.

Secondly, the analysis also offers a glimpse into the gap between startups and SMEs.

As only 20% of the answers are from SMEs and 80% are from startups, the comparison is not very relevant. Nevertheless, it can serve as a basis for an educated guess, especially if it turns out that the results are similar in other countries. As a startup accelerator we expected this kind of ratio, as our reach is better with startups. Consequently, also the analysis will focus more on startups and not so much on the SMEs.

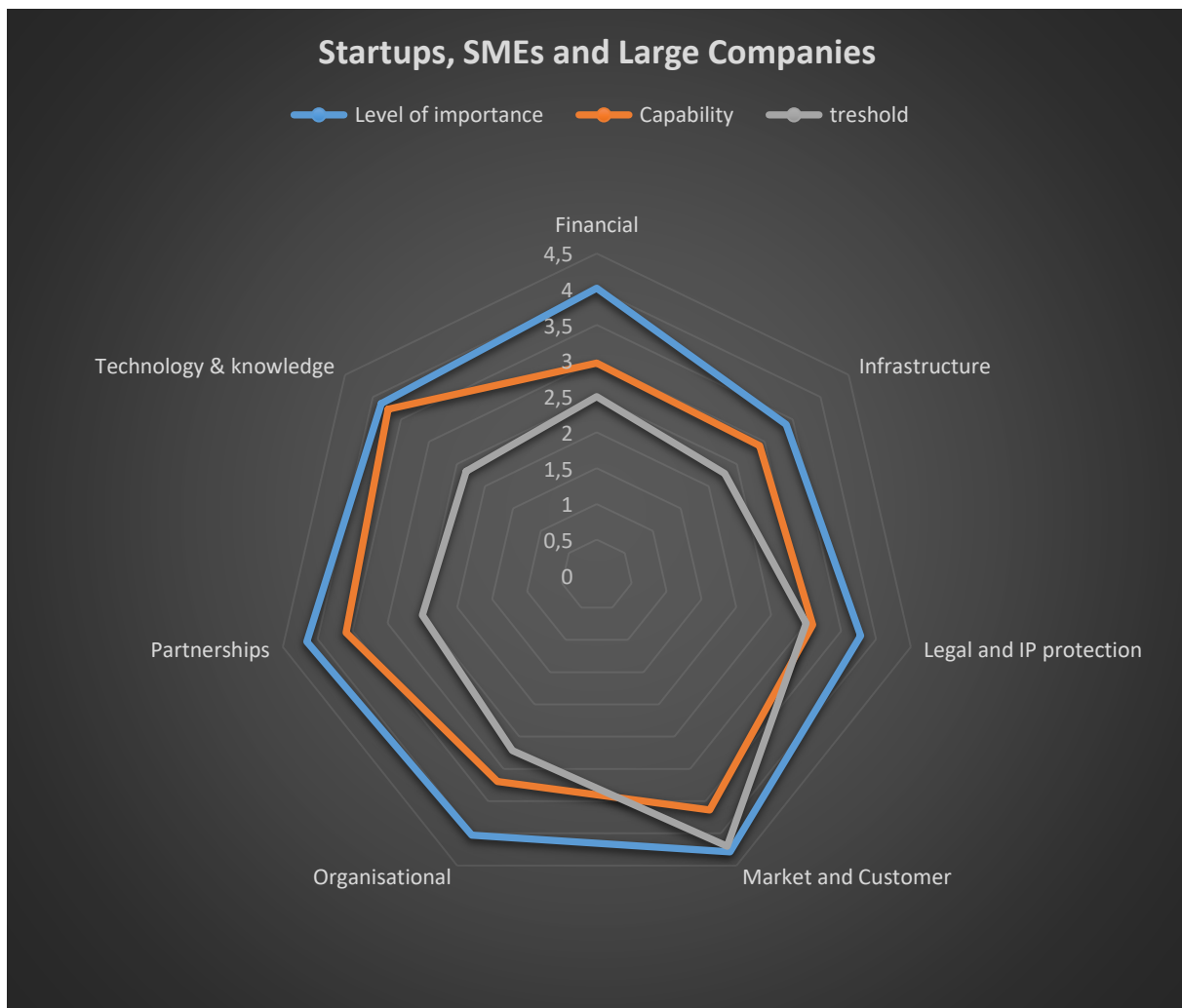


Thirdly, the analysis will also touch on the differences between the results of the survey and the Innovation audit of a large company.



Last, it is also important to take into account the differences and similarities between the five countries where the survey was made. As such, this analysis will also serve as the basis for the trans-national comparison.

Empirical analysis



Spider Chart Slovenia 1: Gap analysis SMEs, Startups and LCs (Source: own work of the University Debrecen Project Partner Team)

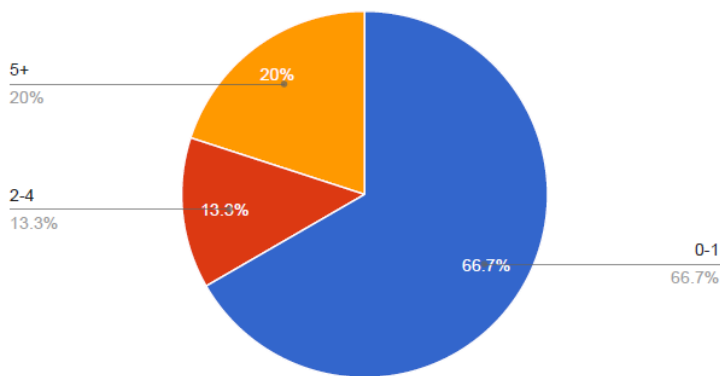
Results show that the LC that we interviewed pays little attention to some of the fields and recognize as very important only “Market and Customer” and “Legal and IP Protection”. All other fields are indicated even below the perceived level of development by startups and SMEs.



On the other hand, startups and SMEs themselves recognize that there is gap between the level of importance and level of development in all fields, except in “Technology & knowledge”.

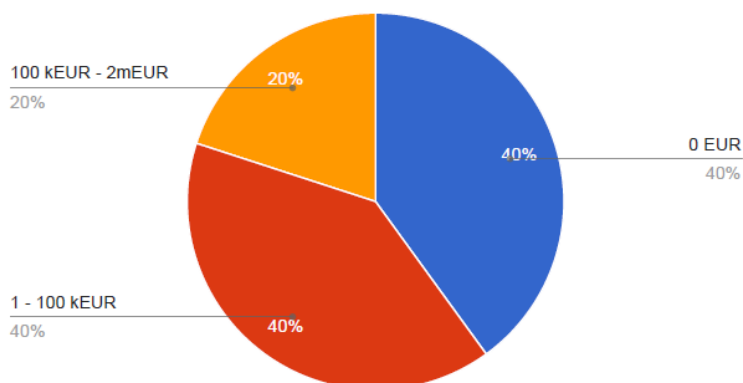
The majority of the answers to the survey came from the companies that are less than 1 year old (66,7%). This is line with the fact that the majority of the answers were from startups, that are by definition, new companies. 13,3% were younger than 5 years, and 20% were older than 5 years.

Age of Company



As expected because of the age of the companies, 40% of the companies had no revenues last year. Another 40% reached revenues up to 100k and 20% had revenues between 100k and 2M euros.

Revenue (total, last year)





Recommended modules for entrepreneurship development

Based on the results there are 11 critical fields above 1-point difference between importance and development for startups, with the biggest gap for startups is in the Financial (4/10), Market&Customer (1/10), Organisational (3/10), Infrastructure (1/10) and Partnerships (1/10)

1. Competencies of investor
2. Access to distribution channels
3. Financial controlling operation based on financial controlling standards and processes
4. Financial resources covering the actual costs
5. FINANCIAL (overall importance)
6. Corporate partnership
7. Organisation processes
8. In case the market requires feasibility demonstration before buying do you have access to partners who can provide pilot scenes or infrastructure to carry it out
9. E-learning, electronically available materials
10. Organisation
11. Financial planning

Not only are there 4 fields specific (=all questions related to Finance) to Finance within the top 10 Financial aspect is also the only overall field that scored the gap higher than 1. The only field that scored positive (that the development was higher than the perceived importance) was Access to IT Technology, where the gap was 0,25 in favour of development. Also, Technology&Knowledge had the lowest overall gap in all 6 fields (=0,222) and the only field not to have at least one question with the gap higher or equal to 1.

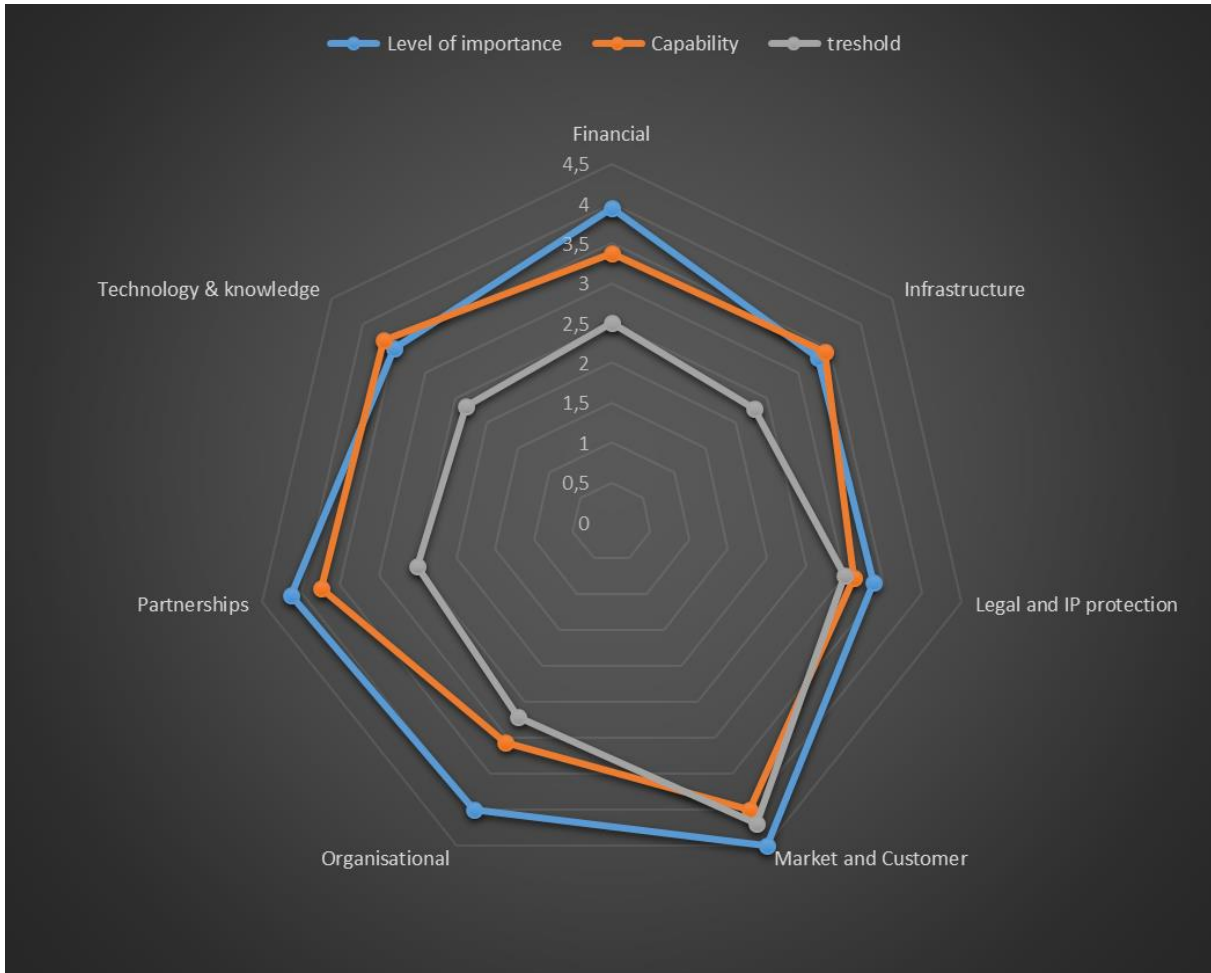


The picture is completely different when it comes to SMEs. There are only 4 questions where the gap identified was above 1:

1. Organisation processes
2. Organisation
3. Roadmapping
4. Competencies of investor



SMEs



Spider Chart Slovenia 2: Gap analysis SMEs and LCs (Source:own work of the University Debrecen Project Partner Team)

Category 1: Market and Customer

Performance

The LC values “market and Customer” higher (4,2) than any other category. Interestingly, the SMEs think that this is almost equally important (4,5) but is not developed enough, even though it is still very high and almost on the level that the LC expects (4). This shows that both parties understand the importance of the category.

Suggested packages for development



SMEs should invest their time and effort to reduce the gap between development and importance as both themselves and the LC recognize this category as extremely important. A package to better understand the market and customers would be beneficial.

Category 2: Organizational

Performance

The LC perceives this category as not very important (2,71), compared to both the level of importance (4,03) and the level of development (3,23) as seen by SMEs. This tells us, that the SMEs might concentrate too much on the Organisational aspects. If we look into the individual question in this category we see, that the only question that was perceived as important for the LC (5) was Organisation in general.

Suggested packages for development

Rather than investing a lot of energy into organisational workshops, a set of requirements and expectations on both sides should be agreed.

Category 3: Legal and IP protection

Performance

“Legal and IP Protection” is the only category other than “Market and Customer” where the SMEs importance and/or development was lower than that of the LC. In fact, the expectations of LC (3) and the development of SMEs (3,08) is almost the same, but the importance is higher for SMEs (3,91) .

If we look closer to the questions, the LC perceives IP protection (4) as more important than the legal background (2). This is almost the opposite to the perception of the SMEs, where Legal background is more important (3,75) and more developed (3,5) than the IP protection (3; 2,75)

Suggested packages for development

As this is an important aspect for the LC, we suggest including aspects dealing with IP protection into education and workshops for SMEs with some general education on the legal aspects.



Category 4: Financial

Performance

In the “Financial” aspect the gap between LC and SMEs is the biggest of all aspects, because the SMEs consider this very important (3,93) while the LC does not (2,5). The aspect “Competencies of an investor” as seen as especially important for the SMEs (4,75) and while relatively developed (3,75), one must wonder if it makes sense to develop it further, when the LC considers it as irrelevant (2).

Suggested packages for development

As the level of importance is very high for the “Competencies of an investor”, we would suggest to include this in the Business Support Package. However, as the LC does not think this is important for the cooperation, some efforts should also be put into explaining the identified differences and lowering the expectations of the SMEs.

As Financial planning also scored relatively high in importance for both SMEs (4,25) and LC (3), we propose a general education on Financial planning with aspects of investment handling included in it.

Category 5: Technology and knowledge

Performance

When it comes to “Technology and knowledge” the level of importance (3,5) and level of development (3,66) almost coincide for SMEs, while the LC thinks this as less important (2,33).

Suggested packages for development

As the LC does not perceive it as important and the SMEs actually think that they are developed above their perceived importance, we suggest not including this aspect in the Business Support Package.

Category 6: Infrastructure

Performance



LC values this category lower (2,28) than the SMEs (3,32). In fact, the only two questions where the LC thought it was partially important (3) had to do with pilots and distribution channels. All others the LC valued as not important (2).

Suggested packages for development

We propose aspects on pilot and distribution channels.

Category 7: Partnerships

Performance

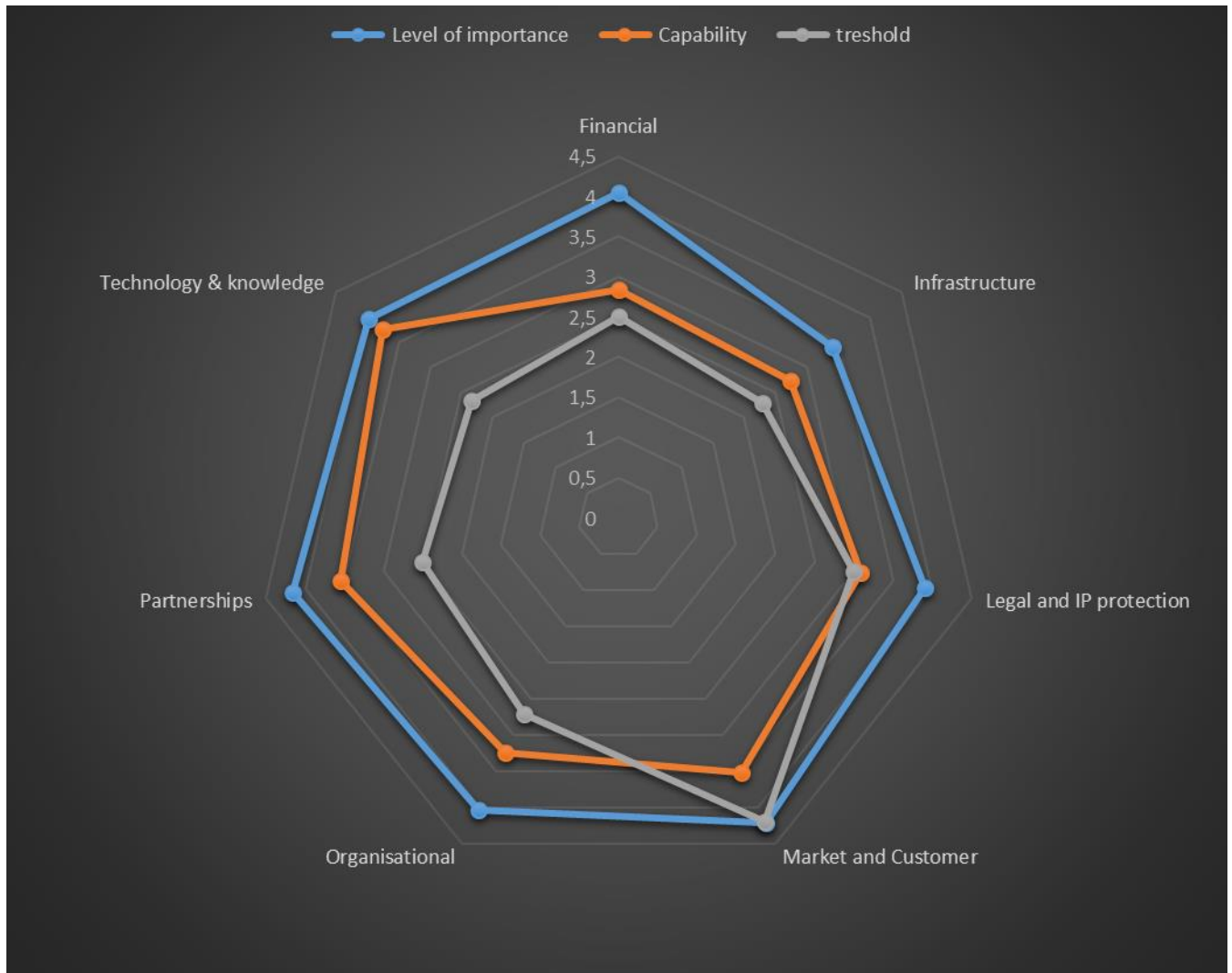
LC values this category lower (2,5) than the SMEs (4,12). If we look closer however, corporate partnership is especially important for SMEs (4,5) and they think they could have it better developed (4). On the other hand, the LC only puts the value of this at 3.

Suggested packages for development

We propose aspects of corporate partnerships, especially if it turns out that the startups also consider this important.



Startups AND LCs



Spider Chart Slovenia 3: Gap analysis startups and LCs (Source:own work of the University Debrecen Project Partner Team)

Category 1: Market and Customer

Performance

As mentioned, the LC values “market and Customer” higher (4,2) than any other category. Interestingly, the startups think that this is almost equally important (4,21) but is not developed enough (3,51). Overall, the level of development is lower for startups than it is for SMEs.

Suggested packages for development



Similar support package than for the SMEs, but as the gap is bigger higher for startups, more importance should be given to them.

Category 2: Organizational

Performance

The LC perceives this category as not very important (2,71), whereas the startups do (4,03). However, they also perceive themselves as relatively well developed (3,23) This tells us that similar to SMEs, Startups concentrate too much on the Organisational aspects.

Suggested packages for development

Similar or the same as suggested for the SMEs.

Category 3: Legal and IP protection

Performance

“Legal and IP Protection” is the only category other than “Market and Customer” where the expectations of LC (3) and the development of startups (3,08) is almost the same, but the importance is higher for SMEs (3,91) .

If we look closer to the questions, the LC perceives IP protection (4) as more important than the legal background (2), but the situation is reversed for Startups (IP Protection 3,5 while Legal 4,33)

Suggested packages for development

As this is an important aspect for the LC, we suggest including aspects dealing with IP protection into education and workshops for Startups with some general education on the legal aspects.

Category 4: Financial

Performance

In the “Financial” aspect the gap between LC and SMEs is the biggest of all aspects, because the SMEs consider this very important (4,04) while the LC does not (2,5). The aspect “Financial resources covering the actual costs” is as seen as especially important



for the Startups (4,5) and while relatively developed (3,25), one must wonder if it makes sense to develop it further, when the LC considers it as irrelevant (2).

Suggested packages for development

As the level of importance is very high for the “Financial resources covering the actual costs”, we would suggest to include this in the Business Support Package.

Category 5: Technology and knowledge

Performance

When it comes to “Technology and knowledge” the level of importance (3,9) and level of development (3,75) almost coincide for Startups, while the LC thinks this as less important (2,33).

Suggested packages for development

As the LC does not perceive it as important and the level of development is relatively high for startups, we do not recommend including this in the Business Support Package.

Category 6: Infrastructure

Performance

LC values this category lower (2,28) than the Startups (3,4). For startups, access to IT infrastructure (4) is especially important and is not so well developed (3,16). Also, they consider pilots as important (3,75) and underdeveloped (2,75).

Suggested packages for development

We propose aspects on pilot and distribution channels as they are important for the LC.

Category 7: Partnerships

Performance

LC values this category lower (2,5) than the SMEs (4,16). If we look closer however, corporate partnership is especially important for Startups (4,25) and it is not well developed (3,16). On the other hand, the LC only puts the value of this at 3. Academic partnerships do not seem important to the LC, and the startups consider it adequately developed.



Suggested packages for development

We propose aspects of corporate partnerships.



Conclusion

Innow project received valuable feedback how to transform supporting services from traditional startup support schemes to have a better, validated tool in our hands which is helping to develop innovative businesses in cooperation with corporates and also gives the link to make cross-border businesses.