



**Toward an innovative Poland:  
The entrepreneurial discovery process (EDP) and  
business needs analysis**

**Firm-level interviews:  
methodological manual**

December 2015

## 1. Introduction

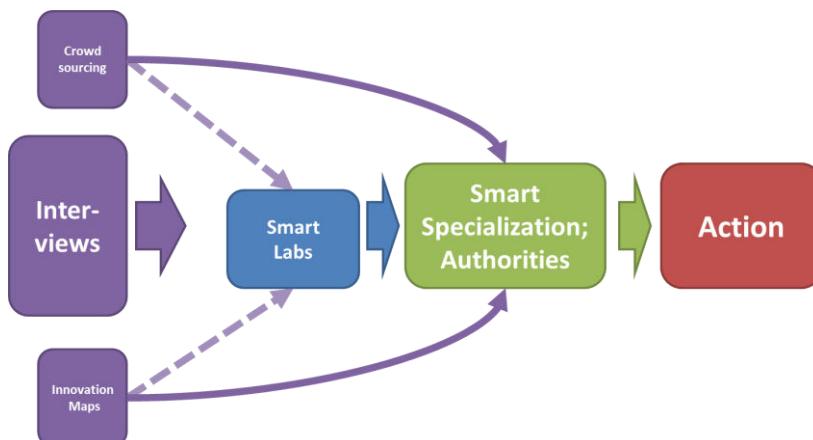
This manual describes the survey instrument and data collection methodology for the World Bank project implemented at the request of the Ministry of Economic Development (MoED) of Poland.

The project aimed to help design and test the entrepreneurial discovery process (EDP) “made in Poland”, a key element of the EC “smart” innovation framework and regional/national strategies for smart specialization (RIS3) in the 2014-2020 financial perspective.

The three main goals of the EDP project were to: (i) detect and assess Polish enterprise needs in terms of innovation and development potential and to link them with public intervention to efficiently use available funds to support Polish companies’ innovation; (ii) help in achieving the EC’s *ex ante* conditionalities on access to EU funding for innovation during the 2014-2020 financial perspective related to the EDP; (iii) strengthen the capacity of public administration and selected business support institutions (BSIs) to ensure EDP continuity.

The face-to-face enterprise survey described in this manual is one of the main elements of the proposed EDP, shown in the simplified chart below. The proposed EDP also includes (i) “Smart Labs”, (ii) innovation policy crowdsourcing, and (iii) innovation maps (see Figure 1).

**Figure 1. Proposed elements of the EDP process “made in Poland”**



Source: The World Bank.

The face-to face enterprise survey had the following objectives:

**Table 1. Interview objectives**

| 1. Main objectives   | 2. Secondary objectives  |
|--|--|
| i) Identify real innovation and growth constraints as well as key drivers of innovation for Polish SMEs<br>ii) Assess the companies’ awareness of the smart specialization process<br>iii) Identify key attributes of companies that could benefit the most from public intervention<br>iv) Identify business and technological trends perceived by the companies<br>v) Identify the leading companies in selected | i) Assess the companies’ awareness and opinion of the quality of public innovation support systems and identify the key reform areas<br>ii) Test a new way to conduct the innovation dialogue between the public and private sectors based on direct face-to-face interviews<br>iii) Build capacity at the national and regional level to conduct innovation enterprise surveys on a continuous basis<br>iv) Identify services that companies need most, e.g. coaching and mentoring |

|   |   |
|---|---|
| <p>business areas/economic activities to be invited to participate in Smart Labs, which aim to help assess the developmental and innovation potential</p> | <p>v) Provide strategic innovation and managerial advice to the participating companies</p> |
|---|---|

*Source: The World Bank.*

The survey covered 500 companies in 10 selected smart specializations identified by the MoED. The sample covered mostly SMEs (see the sample description later in the text) in four regions of Poland: Dolnoslaskie, Zachodniopomorskie, Swietokrzyskie and Slaskie. The in-depth interviews were conducted by seasoned international experts with at least 20 years of relevant experience, and with the companies' top management (CEOs, CFOs, owners). The individual interview took 2-2.5 hours.

The survey used the benchmarking and analytical tools specifically developed for the project, but based on good international practice, including the EBRD/WB BEEPS, Eurostat's Community Innovation Survey and surveys used by authorities in the OECD countries.

This note describes sampling methodology, roles in the project and training of experts, and the interview methodology, including the questionnaire, the interview script and their use. The annexes present tips and examples for the interviewers and the previous (pilot) version of the questionnaire.

## 2. Sampling

### 2.1. Sample size

Five hundred interviews with firms in four regions conducted by the Bank experts.

### 2.2. Sampling criteria

The project used the following criteria to select the companies by:

- Business profile: companies that belong to ten “smart specializations” selected by the MoED<sup>1</sup>
- Size: companies were chosen to reflect the assumed firm distribution in the total firm population:
  - Micro-enterprises (less than 10 employees) – 20%
  - Small and medium-size enterprises (between 10 and 250 employees) – 75%
  - Large enterprises (more than 250 employees) – 5%
- Age: at least 15% of startups (companies with less than 5 years in operations)
- Geographical distribution: interviewed companies to be distributed around the whole region and outside the regional capital
- Technology profile: companies perceived to be innovation intensive, based on desk research and expert judgment (share of R&D spending, patents, technology, industry profile)
- Decision-making profile: companies with independent decision making, excluding, for instance, local subsidiaries of multinational companies; companies with separate financial statements.

Given the selection criteria, the survey adopted a quota sampling method, i.e. a non-random sampling approach.

### 2.3. Sources of firm contacts

The sources of information about companies were the following:

1. Marshal Offices,

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<sup>1</sup> <http://smart.gov.pl/>

2. BSIs
3. RDIs
4. Universities
5. Ministries and central agencies
6. Business angels
7. Own research/desk research
8. Winners of innovation competitions
9. Referrals from the interviewed companies
10. Referrals from the collaborating regional consultants.

The information was collected and reviewed to make an initial selection of companies that reflected the business profile of firms within the selected 10 smart specializations.

### **3. Roles in the project**

#### ***3.1. Project task leader***

Project task leader is responsible for the whole process of conducting interviews. Depending on the size of the undertaking the role of the leader can lie within one person responsibility or a group (ie. the board). The duties of the project task leader are to:

- oversee the progress of the process
- manage all staff employed in the process
- assure high quality of data and data analyses
- oversee the quality of materials used in the interviews
- establish and maintain partnerships with all involved parties.

#### ***3.2. Regional supervisor***

Regional supervisor is responsible for a given country area, is subordinate to the project leader and oversees the progress of interviews in one or more regions. The duties of the regional supervisors are to:

- supervise all activities of their assigned interviewing experts in each region and to monitor their activities during the data collection process through spot checks and call backs
- assess the quality of the work of the interviewers and the quality of the data from the completed questionnaire
- approve questionnaires for data entry ensuring that the assigned interviewers did not overlook inconsistencies and skip patterns
- provide all logistical support and material to interviewers
- provide feedback to interviewers on quality assurance and methodology requirements
- coordinate the selection of establishments and the screening process to ensure that selected establishments meet the requirements of the study
- coordinate with interviewers the quality control of the data collection process.

#### ***3.3. Regional consultants (interviewers)***

Regional consultants are trained innovation experts that will be conducting interviews with companies. Regional consultants first participate in the interviews as observers. During initial interviews with companies, they undergo hands-on training on the application of the interview methodology. Potential doubts and questions are clarified after an interview with the company is completed. The interviewer must then become well-acquainted with the questionnaire to move from a “ticking the box” attitude to

an in-depth discussion that creates a trustful and open-minded atmosphere. This is essential to receive high-quality information from interviewees. The duties of the regional consultants are to:

- conduct face-to-face interviews with the selected respondents
- accurately record respondents' answers
- ensure completeness and accuracy of answers
- ensure security and confidentiality of the completed questionnaires
- deliver completed questionnaires to supervisors
- safeguard the confidentiality and privacy of the collected information.

Regional consultants are also encouraged to follow up with the interviewed firms with an offer of support services tailored to each of the firms and become a main point of contact, advice and guidance.

#### **Box 2. PROPOSED PROFILE OF A REGIONAL CONSULTANT**

Regional consultants are a key element of the EDP system. They organize and conduct individual interviews with companies, organize and moderate Smart Labs (ideally in collaboration with private sector mentors), support the flow of information between companies and scientists, etc. To perform these duties, regional consultants have to be an equal partner for CEOs/owners of companies with whom they meet and should be able to provide meaningful feedback about the company they meet as well as possess thorough knowledge of public and private support instruments available in the system. For that reason, a regional consultant should ideally match the following profile:

- at least 10 years of relevant experience
- proven track record in business consulting or work in the private sector, ideally with a focus on innovation
- comprehensive knowledge of national and regional public support instruments
- familiarity with private sector sources of funding, including banks, VCs, business angels and private equity.

*Source: The World Bank.*

All regional consultants conducting the interviews must undergo a dedicated training. This aims to ensure the uniformity of messages delivered to interviewees. The training should encompass the broader context of the project, its goals and underlying assumption, presentation of the interview and the methodology for delivering it, standardized definitions of the key terms, etc. On a regular basis, adjustment sessions allow experts to align their views and provide a high level of consistency when running the interviews.

All participating experts are exposed to the project, the questionnaire and interview techniques *via* a triple approach:

1. A preliminary training session. This aims to provide future interviewers with a background related to innovation policies, business support financed/co-financed with public funding, how the project was designed and for whom. During this session to-be interviewers are exposed to the questionnaire and the interview approach.
2. Attending interviews with a company as an observer: during the initial interviews, the future interviewer is a “silent partner” to understand how the interview is deployed in different environments (firms). After interviews, debriefing sessions take place to make sure the future interviewer understood all the necessary nuances and the interview technique.
3. Managing interviews by regional consultants under the supervision of an expert: this reverts the previous phase, an expert is here a “silent” participant, however, he can intervene when needed to ensure the high quality of data and the full coverage of the interview scenario. As in the

previous phase, a debriefing session takes place after the interview to exchange suggestions and feedback.

### ***3.4. Interpreters***

An interpreter participates in meetings where an entrepreneur expresses a need for translation from English if the interviewing expert is not Polish. They participate in the interviews on the basis of their time and geographical availability. An interpreter during an interview is a neutral person with the sole role of facilitating the communication between the expert and the entrepreneur.

To ensure the high quality and consistency of the interpreting service, before their first interview, the interpreters are exposed to project background, goals and vocabulary on the basis of provided materials and communication with the project team. If an interpreter is participating in the interview it is likely that the time of the interview will be extended.

### ***3.5. Support staff***

The project's back-office team is responsible for:

- gathering initial data about the firms
- arranging interviews
- preparing documentation for the experts for the interviews (short description of the company, printing out materials, CV, distribution of information about smart specializations, questionnaire on the company's statistical number [PKD])
- managing the database of the companies
- managing the calendar of the meetings
- gathering referrals obtained by the experts from the interviewees
- verifying completeness of files provided by the interviewers
- conducting the quality check after interviews.

### ***3.6. Analytical team***

Analytical team will prepare both region-specific and across-the-board analyses. There may be one analytical team for the whole project in order to compare the data from different regions. Analytical team is responsible for:

- maintaining and updating the database
- conduct data analyses, both qualitative and quantitative
- verify the data quality via intra- and interregional comparisons
- drawing conclusions from the analyses and formulating recommendations
- giving feedback to the interviewers on incoherent data.

## **4. Interview**

### ***4.1. Arranging the interview***

The interview process is composed of three general parts: (i) preparation of the interview, (ii) the interview itself and (iii) tasks after the interview is conducted. Table shows tasks specific for each of these three stages and they are further described in the following sections.

**Table 3. Checklist for the interview process**

| BEFORE AN INTERVIEW:  |  |
|---|--|
| <b>Setting up a meeting</b>   |  |
| – identify company, verify its match with the project and call / mail |  |

|   |
|---|
| – arrange an interview with the representative of the company (CEO, owner)  |
| – confirm the meeting by phone + mail two days before the interview; gather basic data (PKD/NACE, names, address) and send an info pack |
| – update the meeting calendar   |
| – update the database   |
| – prepare descriptions of companies to be met in the coming week and share with experts so they can prepare for the meetings            |
| <b>Certificates</b>   |
| – print certificates with company names and provide them to experts before interviews   |
| – print some blank certificates (just in case) and provide them to experts  |
| <b>Experts</b>  |
| – confirm experts' availability   |
| – ensure a means of transport   |
| – book hotel for experts  |
| <b>Regional consultants</b>   |
| – confirm availability of regional consultants  |
| – provide regional consultant with information about upcoming meetings (date, address etc.)   |
| – coordinate presence of the regional consultants in the interviews   |
| <b>Interpreters</b>   |
| – confirm availability  |
| – provide information about the upcoming meetings   |
| – coordinate presence of the interpreters in the interviews   |
| – ensure a means of transport   |
| – book hotel for an interpreter if necessary  |
| <b>Documents to be printed out / prepared before the interview</b>  |
| – description of the project  |
| – form with the distribution of smart specializations + PKD/NACE codes  |
| – business cards of experts   |
| – CV of the expert  |
| – description of the company  |
| – certificate for the company   |
| – scenario of the interview for the expert  |
| – calendar of the meetings with firms' details and participating regional consultants and interpreters                                  |
| <b>DURING AN INTERVIEW:</b>   |
| – ensure that all questionnaire and assessment files are filled in  |
| – gather data about S3 and PKD/NACE   |
| – gather referrals to other potential project participants  |
| – maintain an online calendar and update it   |
| – provide support (help desk)   |
| – keep track of meetings and involved experts, consultants, interpreters  |
| – Propose – when relevant – participation in the EDP and Smart Labs   |
| <b>AFTER AN INTERVIEW:</b>  |
| – send out questionnaires to the interviewed company (PL clean, ENG clean, manual)  |
| – collect info (files) from the experts   |
| – collect paper materials from the experts (smart specializations + PKD)  |
| – perform the quality check (telephone call with a standardized procedure)  |
| – collect feedback from local consultants and interpreters  |
| – update the database   |
| – export data to the database   |

Source: The World Bank.

Interviews are arranged according to a standardized pattern presented below.

1. First step is to gather information about the company.

2. If the company seems to fit into one of the 10 smart specializations, then a team member calls the company to initiate contact. The first call to the company aims to reach the CEO/owner or a person from the management of the firm. When a direct phone number to the CEO is not available and it is not possible to connect to such a person at the given moment, the call is interrupted and another attempt is undertaken at the time agreed on with the person from the company. Such attempts and calls are registered (based on Dolnoslaskie it took about three to four contacts to establish interview).
3. During the initial call the previously gathered data are confirmed. The purpose of the project, as well as potential benefits and costs from firm's participation is shortly explained. Finally, a meeting is scheduled during this call and the entrepreneur is asked whether an interpreter is needed. During this call the team uses a standardized project description and a list of expected benefits for the firm.
4. The information pack is sent out to the company with basic information about the project and the firm's potential participation;
5. Two to three days before the scheduled interview, a confirmation call is conducted to ensure that the interview takes place.

The interview venue is indicated by the company. Usually it is the company's office, but meetings can also take place in other locations, such as a hotel or a business support institution's office. The priority of the selection of the interview location is a comfortable atmosphere for the company, where discussion can take place in a relatively uninterrupted fashion and in a private environment.

#### ***4.2. Reducing interviewer's bias***

The questionnaire includes questions that have to be used literally as they are written to limit interviewer-specific bias, which otherwise could be added to the answers provided by the respondents. However, there are also questions that require a short discussion or probing that has to be steered by an expert to elicit specific information or obtain a better understanding of the company and its functioning. The interviewers should not try to influence the answers from respondents and should use the most neutral language and tone possible, though it can happen that the responses do not follow the intended direction of the interview. To handle these situations, in general, questions can be classified in two categories: i) opinion-based or sensitive questions and ii) hard-data questions.

1. In the case of questions requiring the subjective opinion of the respondent or when the subject of the question is sensitive, an interviewer should avoid providing additional interpretation of the questions, as they could introduce interviewer bias. The interviewer can reread the question to the respondent, however, he or she should not try to use synonyms or provide additional pieces of information to make it easier for the respondent to understand. If the respondent presses the interviewer for an additional explanation, the interviewer should provide additional details to help clarify the questions, trying to avoid prejudicing any response.
2. Hard-data questions are those directed to get objective facts including quantitative data. In some cases, the questions are quite specific and require identifying the appropriate answer from the sometimes "narrative stories" provided by the respondent. In these cases, interviewers are allowed to probe the respondent using standard techniques.

Since the interviews also aim to gather qualitative data, the interviewer should not ignore the signals or messages sent by the respondent. For that reason, any additional information can be inserted in the commentary boxes that are provided in the questionnaire. A separate box is provided for almost every question where important comments and remarks regarding the given aspect can be noted.

#### ***4.3. Interview guide***

The interview consists of five parts and takes up to approximately 2.5 hours.

- A) Introduction and background of the project (10 minutes)
- B) Indication of smart specialization (5+ minutes)
- C) Gathering data (90-100 minutes)
- D) Discussion of results (10 minutes)
- E) Expert's assessment and feedback (10+ minutes)

## **A) *Introduction and project background***

### **A.1. Introduce the expert, interpreter and other participants (2 min.)**

### **A.2. Explain the goals of the interview (3 min.)**

The following introduction is read during the recruitment process:

#### **READ**

"Your company is taking part in a research project about assessing firms' needs and designing and testing an entrepreneurial discovery process (EDP) that is being implemented by the Ministry of Economic Development. We are using various sources of information to prepare a report about innovation. One important source of information is the experience of people like you. We will discuss three main topics with you: your perception of barriers for company growth, your perception of barriers to innovation and drivers that motivate companies to become more innovative.

It is very important that you be as honest as possible in your answers and throughout the discussions. All your comments will be treated confidentially and presented anonymously in the final report.

There may be disagreements during the interview between you and our experts. This is not a problem. We are interested in all opinions. Every argument you put forward has its own added value. In case of a disagreement, it is important that you discuss with the expert, so that we can note your arguments. Throughout the discussion, you might refine or change your original standpoint or, on the contrary, you may stick to your original position because you find it more robust than the proposed alternatives. This is all part of the process, as long as there is mutual respect for other opinions."

### **A.3. Explain key project concepts and project background**

1. Project background:
  - a) About EU context: opportunities presented by the (2014-2020) program. About €10 billion to be invested in support of innovation.
  - b) Advantages for Poland. What could be the advantages of the current project for the Polish economy?
  - c) Why this is a new paradigm for investing EU money (from absorption to results)
  - d) Smart specialization aspect. EU innovation money can be invested in smart specializations only and companies to be at the center of innovation policy (not administration, not BSIs, not RDIs).
2. Project description:
  - a) Respondent. Individual in-depth interviews with CEOs to discuss firms' needs (difference between a need and a demand) – interviews take a form of a dialogue.
  - b) Benefits for the firm. The project is beneficial to companies on several levels – helps you look at your own enterprise from a different angle; project recommendations will be addressed to BSIs and public administration to adjust their innovation-oriented services, instruments, programs, etc., to better match identified needs of companies. This is at the core of the EDP (explain the EDP) and should lead to a process or a regular dialogue with firms within the context of smart specializations.

- c) Topics covered in the interview. Our discussion will focus on the following areas, among other things: company structure and basic operational information, products, management, competition, suppliers, growth drivers, growth constraints, innovation drivers and innovation constraints.

## B) About the questionnaire

The questionnaire was divided using the model of innovativeness of a company. The model is attached at the end of this Annex. It has 13 parts (tabs or pages) with questions coded in the Excel workbook, there is a place for experts' assessments and benchmark charts, and a checklist for the interviewer to make sure that no part of the interview process is missing.

The questionnaire comprises two types of questions: quantitative and qualitative. The individual parts and questions asked during this part of the interview are listed below. The left column shows questions included in the questionnaire and the right column includes explanations and hints for the interviewer about the aim of the questions (marked in blue italic font). Whenever questions use technical terms or pilot has shown that some respondents may be struggling with them, an explanation is provided. All questions are presented in the tables below.

Questions in the questionnaire are coded in three different colors to facilitate the differentiation between responses of the interviewee from the assessment and comments of the expert (interviewer).

1. The **light blue boxes** are used for recording the respondent's answers. All these boxes must be filled in during the interview.
2. The **orange boxes** located on the right hand side of the questionnaire are devoted to the expert's comments and remarks. These boxes are used when important aspects or issues are mentioned, but not caught by the questions provided in the questionnaire. There is no obligation to fill in all orange boxes.
3. The **dark blue boxes** are only for the expert's assessment of selected issues or open-ended questions; the expert fills in blue boxes on the basis of the discussion and overall impression without asking the interviewee direct questions about these aspects. All blue boxes have to be filled in during the interview.

The qualitative module of the interview comprises 20 open-ended questions that should be read literally to the interviewee and four questions directed at the interviewer that assess general perception of the interview (its quality, discussion flow, rapport). These 20 questions open the floor for discussion between the expert and the respondent and aim to deepen the information received during the quantitative part. The goal is to understand the "whys" and "hows" within the context of innovation.

One of the key concerns during this discussion is that the expert should avoid prejudicing any responses from the interviewee's side. The role of the expert is to synthesize this discussion and note it down as a short description that highlights the respondent's main arguments and answers. It is crucial that these are the respondent's answers and not the expert's perceptions. When needed, the expert's comments or view can be included as well, but must be clearly separated from the interviewee's statements. Since the qualitative part of the interview is strongly discussion-based, it is not necessary to follow the order of the questions strictly. It might be more natural to mix the sequence depending on the flow of the discussion.

The qualitative module is challenging to implement, because it requires prior training in probing and leading the discussion in a way that allows key points to be captured. It is not recommended that the expert does not write down all the answers during the interview, to not interrupt the flow of the discussion. Filling in the qualitative module after the interview should only be done as a last resort. The ideal option is to record the interview and then create a transcript of the respondent's answers. This will help avoid the loss of important information acquired during the conversation.

## B.1. List of quantitative questions in the interview

The purpose of this section is to provide information and guidance to the consultants, researchers, field managers, field supervisors and interviewers on how to understand the questions in the surveys. Every question about frequency has the same, normalized scale visible on every page (tab) so that the answers are easy to compare. The scale is as follows:

| Interview rating scale   |  |
|--|--|
| 0 - never  |  |
| 1 - very seldom (less often than once a year)  |  |
| 2 - seldom (1-2 times/year)  |  |
| 3 - sometimes (3-6 times/year)   |  |
| 4 - often (7-12 times/year)  |  |
| 5 - very often (more often than once a month)  |  |
| (-7) - not applicable, e.g. R&D Department Driver when a firm doesn't have a R&D dept. |  |
| (-8) - don't know  |  |
| (-9) - decline to answer   |  |

The first two tabs: "Welcome page" and "EIA use" describe the way the questionnaire works and give some background about it. The next tab is called "IS3" and its purpose is to start the interview and make the interviewee aware that the conversation concerns mostly the smart specialization topic.

| <b>"Economic potential" (page 1/13)</b>  |   |
|--|---|
| <p><b>The "form presentation"</b> page contains background information about the enterprise. One challenge on this page could be the box with the "sector of activity", especially when: a) the company operates in several sectors, b) innovations are observed in a sector different from company's core business sector. The question about the company's sector of activity refers predominantly to innovative activity, if it is not identical with the core business. If two or more sectors are involved, we should pick the one that is most interesting from the standpoint of our research (i.e., from the standpoint of innovation). If there is more than one interesting sector of activity, we should consider repeating the interview for another sector of activity. Those activities should be listed in the commentary box next to the question.</p> |   |
| Company  | <i>Name of the company</i>                            |
| Contact  | <i>Name of the person</i>                             |
| Position   | <i>Position of the person in the company</i>          |
| Address  | <i>Company's address</i>                              |
| E-mail   | <i>Preferably the CEO's e-mail address</i>            |
| Phone number   | <i>Preferably the CEO's cell phone number</i>         |
| Date company started   | Self-explanatory                                      |
| Three main four-digit PKD (NACE) codes, in which the company operates  | Use NACE rev. 2 codes.                                |
| Sector of activity   | Self-explanatory                                      |
| Export share as% of total revenue (2014)   | Self-explanatory                                      |
| What was the total revenue in 2014?  | Self-explanatory                                      |
| What was the total revenue in 2013?  | Self-explanatory                                      |
| What was the total revenue in 2012?  | Self-explanatory                                      |
| When did you start investing in R&D?   | <i>Year that company started investing in R&amp;D</i> |

|  |   |
|--|---|
| What was the net profitability of the firm (net profits/revenue) in the last year?   | Self-explanatory  |
| What % of the total revenue comes from innovative products/services?   | Self-explanatory  |
| What is the total amount of any type of public support received in last three years?   | By public support we understand every Polish support mechanism that can be obtained in Poland and is financed by Polish funds (e.g. not Horizon 2020).                        |
| What is the total amount of R&D/innovation grants received in the last three years?  | By R&D/innovation grants we understand every national public support mechanism for R&D activities, innovation activities or any investment that is connected with innovation. |
| From your experience, how satisfied are you with the efficiency of the system when you applied for support?<br>(1 - very low, 5 - very high, 0 - never applied, -7 – don't know) | Self-explanatory  |
| What was the amount of R&D spending over the past 3 years?   | Self-explanatory  |
| What was the amount of investment spending over the last 3 years?  | Self-explanatory  |
| What was the amount of innovation spending over the past 3 years?  | Self-explanatory  |
| What was the frequency of access to public innovation support in the last 3 years?   | Self-explanatory  |

| <b>“Human capital” (page 2/13)</b>   |   |
|--|---|
| <b>The “company structure” page contains information about employment structure and the quality of human capital inside the company.</b> |   |
| What is the total number of employees?   | What was the total number of employees in the company in the end of 2014 – in Full Time Equivalent? |
| How did the employment change over the last 3 years? (Grow/stable/reduced)   | Self-explanatory  |
| How many of the employees have technical education (e.g. science, engineering, maths)?   | At the end 2014?  |
| How many employees in your firm are currently performing R&D work?   | At the end 2014?  |
| How many of the employees have higher education?   | At the end 2014?  |
| How many employees have a PhD degree?  | At the end 2014?  |
| Do you have sufficient technological know-how to design and implement significant innovations (new in the market)?                       | Self-explanatory  |
| Do you have sufficient managerial know-how to design and implement significant innovations (new in the market)                           | Self-explanatory  |

### “Market position” (page 3/13)

|  |   |
|--|---|
| This part aims to assess what the company's place on the market is: Is it a leader? On which markets is it active?, etc. |   |
| Do you operate in a traditional/niche/specialized market?  | A niche market is a market that could be small, a specialized market is a market that contains specialized group of clients, who need specific types of products. |
| Are you a market leader or one of many producers of similar products/services?   | Self-explanatory  |
| On what basis do you compete: price, technology, design, quality?  | Self-explanatory  |
| Export share as % of total revenue (2014)  | Self-explanatory  |
| Do you export to simple or sophisticated markets?  | Self-explanatory  |

|  |                  |
|--|------------------|
| <b>"Growth constraints" (page 4/13)</b>  |                  |
| This page helps identify internal and external growth constraints. It is important to remember that these constraints refer strictly to company growth and not to innovation growth. Internal constraints may be difficult to pinpoint because the respondent must do some self-assessment here, which is why the interviewer's interaction will be appreciated. The interviewer is also encouraged to share some examples from his/her own experience in order to acquaint the respondent with the topic. |                  |
| How often is the management of your firm a constraint to growth?   | Self-explanatory |
| How often is the availability of hard skills (human capital) a constraint to growth?   | Self-explanatory |
| How often is the availability of soft skills (human capital) a constraint to growth?   | Self-explanatory |
| How often are the barriers to entry new markets a constraint to growth?  | Self-explanatory |
| Is there something else that constraints the growth of your firm?  | Self-explanatory |

|  |                  |
|--|------------------|
| <b>"Innovation processes" (page 4/13)</b>  |                  |
| This page consists of three parts and refers to the understanding of innovation by company management. The first part ("company's strategy") defines the company's attitude toward change. The interviewer should evaluate whether the company overall tries to be innovative vis-à-vis what is happening on the market: Is the firm ahead of the market, or does it follow the "let's wait and see" approach, adapting its actions accordingly? |                  |
| The second part refers to the prevalence of the four types of innovation. Innovation frequency (for each type of innovation) should be specified on a scale from 1 to 5. To be able to determine if the frequency of innovation is indeed significant, please provide the absolute number of innovations for the last 3 years.   |                  |
| Which elements of the innovation process do you pursue (tell us how it's done (expert assessment):   | Self-explanatory |
| <ul style="list-style-type: none"> <li>• Identification of market needs</li> <li>• Identification of innovative ideas</li> <li>• Validation of innovative ideas, financial and technical feasibility studies</li> <li>• Design</li> </ul>  |                  |

|  |                  |
|--|------------------|
| <ul style="list-style-type: none"> <li>• Prototyping</li> <li>• Testing</li> <li>• Production</li> <li>• Commercialization</li> </ul>  |                  |
| How many (...) innovations have you introduced in the last 3 years?  | Self-explanatory |
| How many (...) innovations have you introduced in the last 3 years?<br><ul style="list-style-type: none"> <li>• Product</li> <li>• Process</li> <li>• Organizational</li> <li>• Marketing</li> </ul> | Self-explanatory |
| To the best of your knowledge, your (...) innovations are new to the:<br>1) firm, 2) country, 3) world, 4) EU<br><ul style="list-style-type: none"> <li>• Product</li> <li>• Process</li> </ul>      | Self-explanatory |
| Do you feel comfortable making risky decisions (1-5)?<br>Very comfortable (1) - Very uncomfortable (5)   | Self-explanatory |
| What kind of Quality Strategy are you implementing?<br>(1-5; expert's judgment based on the open answer)   | Self-explanatory |

| <b>“Innovation management” (page 5/13)</b>   |                  |
|--|------------------|
| Management quality is the most important driver of growth and innovation in companies. This part aims to assess what is the quality of company's innovation management, how do companies manage creation of innovations, do they have R&D departments or outsource it, how do they use knowledge, etc. |                  |
| Does the management of your firm behave in “reactive” manner to what happens on the market (i.e. listens to the customers and does what they tell him)?  | Self-explanatory |
| Does the management of your firm behave in a “proactive” manner to what happens on the market (i.e. anticipates clients' needs and proposes appropriate products/services/solutions)?  | Self-explanatory |
| Does the management of your firm behave in a “preemptive” manner to what happens on the market (i.e. attempts to create entirely new markets, e.g. Apple with iPhone)?   | Self-explanatory |
| How often is your company's management mindset a driver for innovation?  | Self-explanatory |
| How often is your R&D department a driver for innovation?  | Self-explanatory |
| How often is your employees' initiative a driver for innovation?   | Self-explanatory |
| How often do you use innovation to grow your business?   | Self-explanatory |
| How often is the management of innovation a constraint to innovation?  | Self-explanatory |
| Do you have a strategy for innovation? / Is innovation part of your strategy?  | Self-explanatory |

|  |                  |
|--|------------------|
| Do you have an R&D/innovation department/staff?  | Self-explanatory |
| Do you use interdisciplinary teams to develop innovations? (e.g. marketing + construction, scientist etc.) | Self-explanatory |
| Do you have a mechanism for knowledge management (e.g. sharing, competence building)?                      | Self-explanatory |
| Are you able to develop innovation systematically/continually?   | Self-explanatory |
| Do you have procedures to validate innovative ideas?   | Self-explanatory |
| Does your motivation system stimulate risk-taking and innovation?  | Self-explanatory |
| Do you own patents/licenses or have you applied for them?  | Self-explanatory |

#### **“Drivers” (page 6/13)**

This page is related to innovation drivers. Drivers are understood as incentives for the management that encourage innovation. The focus here is on a broad number of aspects that can motivate the management to innovation and the main task is to verify the intensity of each driver.

|  |                  |
|--|------------------|
| How often does intellectual property drive your innovations?                       | Self-explanatory |
| How often does certification or other standards drive your innovations?            | Self-explanatory |
| How often does the legislation drive your innovations?                             | Self-explanatory |
| How often does sources of funding drive your innovations?                          | Self-explanatory |
| How often are new market opportunities or a market trend a driver for innovation?  | Self-explanatory |
| How often does product quality drive your innovations?                             | Self-explanatory |
| How often does the development of a new product or service drive your innovations? | Self-explanatory |
| Is there something else that drives your innovations? What is it?                  | Self-explanatory |

#### **“Information sources” (page 7/13)**

This page concentrates on sources of information about innovation, intensity of their use, and information about whether they are domestic or international in character. The point is to verify whether the interviewee uses various information sources to identify current technology developments that would enhance the company's ability to identify trends and possibly foresee market development. After asking about all the sources mentioned here, the interviewee is asked to indicate sources of an international nature, which should indicate the company's openness to international knowledge.

How often are (...) a source of information about innovation for your company?

|                            |                  |
|----------------------------|------------------|
| Internal company resources | Self-explanatory |
| Research and development   | Self-explanatory |

|   |                  |
|---|------------------|
| institutes  |                  |
| Universities (incl. TTOs)   | Self-explanatory |
| Business support institutions (e.g. advisory firms, intermediaries, etc.) | Self-explanatory |
| Industry consultants  | Self-explanatory |
| Members of a cluster  | Self-explanatory |
| Customers   | Self-explanatory |
| Suppliers   | Self-explanatory |
| Social networks (real and virtual, e.g. LinkedIn)                         | Self-explanatory |
| Government (national or regional)   | Self-explanatory |
| EU  | Self-explanatory |
| Internet  | Self-explanatory |
| Exhibitions   | Self-explanatory |
| Seminars/lectures   | Self-explanatory |
| Technical literature  | Self-explanatory |
| Investors (internal or external)  | Self-explanatory |
| Other: what?  | Self-explanatory |
| Which of these are international sources? <a href="#">[yes/no]</a>        |                  |

#### **“Innovation constraints” (page 8/13)**

This page is similar to the previous page; its purpose is to help identify constraints encountered by the enterprise when embarking on innovation development or implementation. Barriers have been divided into internal and external ones. The interviewer should stress that this part focuses on innovation, which is not the same as growth, as mentioned previously.

|  |                  |
|--|------------------|
| How often is the availability of hard skills (human capital) a constraint to innovation? | Self-explanatory |
| How often is the availability of soft skills (human capital) a constraint to innovation? | Self-explanatory |
| How often is the legislation a constraint to innovation?                                 | Self-explanatory |
| How often are technical constraints a barrier to innovation?                             | Self-explanatory |
| Is there something else that constrains innovation development in your firm?             | Self-explanatory |

#### **“Technology usage” (page 9/13)**

This part aims to assess how do entrepreneurs use the technology in their companies. Are they up to date with new digital systems that help optimize production or management processes?

|  |                  |
|--|------------------|
| How often do you acquire the newest technologies?          | Self-explanatory |
| Do you create your own technologies?                       | Self-explanatory |
| Do you use the following key enabling technologies (KETs): | Self-explanatory |

|  |                  |
|--|------------------|
| <ul style="list-style-type: none"> <li>• nanotechnology,</li> <li>• micro-and nanoelectronics (incl. semiconductors),</li> <li>• advanced materials (polymers, biomaterials, optical materials, etc.)</li> </ul> |                  |
| Do you use IT systems (CRM, CAM, CAD others)?  | Self-explanatory |
| How often do you use digital platforms to contact your suppliers, manage logistics, etc.?  | Self-explanatory |
| How often do you use e-commerce? (what % of sales)   | Self-explanatory |
| Do you have an electronic invoice exchange system?   | Self-explanatory |

| <b>“Financial needs” (page 11/13)</b>   |                  |
|---|------------------|
| Financial constraints are often the most important innovation constraints for companies from all over the world. This part aims to assess what are the entrepreneurs' needs towards financing, does it constrain the innovation processes and how potential problems can be resolved. |                  |
| How often is the access to financing a constraint to innovation in your company?  | Self-explanatory |
| How often do declining margins drive your innovations?  | Self-explanatory |
| How well do you know the instruments of regional public support?<br>1 - very bad, 5 - very good   | Self-explanatory |
| How well do you know the national public support system?<br>1 - very bad, 5 - very good   | Self-explanatory |
| What kind of financing is most attractive to you? (tick one box) <ul style="list-style-type: none"> <li>• bank loan</li> <li>• own capital</li> <li>• VC</li> <li>• PE</li> <li>• EU donations</li> <li>• EU financial instruments</li> <li>• other, which?</li> </ul>                | Self-explanatory |

| <b>“Relationship management” (page 12/13)</b>  |                  |
|--|------------------|
| One of the most important drivers of innovation are suppliers, customers, and other companies. This part aims to assess the networking skills of interviewed entrepreneur. |                  |
| Do you systematically collect information about your customers?  | Self-explanatory |
| Do you systematically use and update a customer relationship management (CRM) system in your company?  | Self-explanatory |
| Do you encourage your suppliers to   | Self-explanatory |

|   |                  |
|---|------------------|
| do R&D?<br>(Yes / No)   |                  |
| Do you systematically collect information about your suppliers?                         | Self-explanatory |
| Do you systematically collect information about your competitors?                       | Self-explanatory |
| How often do you develop partnerships with your competitors?                            | Self-explanatory |
| Do you cooperate to create innovations?   | Self-explanatory |
| How often are your competitors a driver for innovation?                                 | Self-explanatory |
| How often are competitors a constraint to growth?                                       | Self-explanatory |
| How often are your customers a driver for innovation?                                   | Self-explanatory |
| How often are customers a constraint to innovation?                                     | Self-explanatory |
| How often are the customers a constraint to growth?                                     | Self-explanatory |
| How often are your suppliers a driver for innovation?                                   | Self-explanatory |
| How often are suppliers a constraint to innovation?                                     | Self-explanatory |
| What is your level of satisfaction working with RDIs?<br>(1 - very bad - 5 - very good) | Self-explanatory |

#### **“Place in GVC” (page 13/13)**

This part aims to assess what is the place of a company in the Global Value Chain, does the entrepreneur know his suppliers, customers, other parts of the Global Value Chain, or whether he/she has the knowledge about the part of the GVC where the most value is created.

|  |                  |
|--|------------------|
| Where is your value chain based?<br>(tick one box): <ul style="list-style-type: none"> <li>• region</li> <li>• country</li> <li>• Europe</li> <li>• World</li> </ul> | Self-explanatory |
| If you were to estimate the percentage of your activities between the following parts of GVC, how would you do this?   | Self-explanatory |
| 1. Pre-production activities (design, stocks, transport, access to financial resources, R&D)   | Self-explanatory |
| 2. Production (production, storing parts/components, transport, packing, storing final products)   | Self-explanatory |

|   |                  |
|---|------------------|
| 3. Sales (distribution, transport to recipients, guarantee service, user contacts)                        | Self-explanatory |
| 4. Services (connected to own final products, products of other companies, B2B, for individual customers) | Self-explanatory |
| 5. Additional functions (managing, marketing, technologies, finance, HR)                                  | Self-explanatory |

## B.2. List of questions for the qualitative part of the interview:

| Firm:<br>Date:<br>Place:   | Expert:<br>Interview duration<br>[hh:mm]:  |
|--|--|
| QUESTIONS TO ASK   | INSTRUCTIONS FOR THE INTERVIEWER   |
| 1a. Please describe your <b>customers</b> and their <b>customers</b> .                                 | <p><b>Interviewer:</b> First, determine the <b>type of customer</b>, i.e. <b>intermediate</b> customer (a dealer that purchases goods for re-sale) or an <b>ultimate</b> customer who does not re-sell the things bought but either passes them to the consumer or actually is the consumer.</p> <p><b>Second</b>, determine if the clients of the primary customer (if any) are also customers (purchase goods) or consumers (use them). <b>Third</b>, determine if the customers and clients are primarily (based on location) local, national level or international.</p> <p><b>Interviewer:</b> Determine who is more important, suppliers or customers (or both).</p>   |
| 1b. Please, describe your <b>suppliers</b> and their <b>suppliers</b> .                                | Does the firm purchase its main raw material, intermediate or final product by direct means, or by using intermediaries?   |
| 1c. Who do you compete with?   | <p>Number of competitors at: local, national and international level.<br/>Use the scale<br/>1 (less than 5), 2 (between 5 and 10), 3 (between 11 and 50), 4 (more than 50), 6 (don't know)</p> <p><b>Interviewer:</b> Please try to determine who the firm's competitors are.</p> <ol style="list-style-type: none"> <li>1. In terms of <b>location</b> (local, national and international level).</li> <li>2. In terms of <b>types</b>.             <ol style="list-style-type: none"> <li>2.1. <b>Direct</b> competitors, i.e. their products perform the same function as the one sold by the enterprise. For example, one brand of pick-up trucks competes with several other brands of pick-up trucks.</li> <li>2.2 <b>Substitute or indirect competitors</b>, i.e. their products are close substitutes for the ones produced by the enterprise. For example, butter competes with margarine, mayonnaise and other various sauces and spreads, etc.</li> </ol> </li> </ol> |
| 2a. How do you develop partnerships with your biggest <b>clients</b> ?                                 | Who are your biggest clients? How did you develop partnership with them? How long ago did your business relationship start?  |
| 2b. How do you develop partnerships with your biggest <b>suppliers</b> ?                               | Who are your biggest suppliers (in terms of turnover)? How did you develop partnership with them? How long ago did your business relationship start?   |
| 3. What do you use the <b>networking</b> and <b>clusters</b> for? Do you develop ideas via networking? | Examples of networks and cluster types.  |
| 4a. Could you describe any formal collaboration with <b>universities</b> ?                             | If any collaboration has taken place. 1) Write the <b>name</b> of the university and classify it as <b>national</b> or <b>international</b> university. 2) Try to determine how the firm has <b>benefitted</b> from the cooperation and write it down.   |
| 4b. Could you describe any formal  | If any collaboration has taken place. 1) Write the <b>name</b> of the R&D  |

|  |  |
|--|--|
| collaboration with <b>R&amp;D centers?</b>   | <p>center or institute and classify it as a <b>national</b> or <b>international</b> center. 2) Try to determine how the firm has <b>benefitted</b> from the cooperation and write it down.</p>   |
| 5a. Earlier you told me how many <b>product</b> innovations you introduced. Can you please explain shortly what the innovations you told me earlier were?        | <p><b>Interviewer, please show card:</b></p> <ol style="list-style-type: none"> <li>1. New products are any products with significantly new characteristics or uses</li> <li>2. New or increased functions and applications, including user friendliness</li> <li>3. New or significantly improved technical specifications or capabilities</li> <li>4. New or significantly improved components or materials</li> <li>5. (Do not include minor changes, regular seasonal changes, routine upgrades and purely aesthetic or design changes that do not affect functionality)</li> <li>6. Do not include the resale of a good purchased from other enterprises)</li> </ol> <p><b>Interviewer, please ask:</b><br/>What would it take for you to take this innovation to the next level (country, EU or world)?</p>  |
| 5b. Earlier you told me how many <b>process</b> innovations you introduced. Can you please explain shortly what the innovations you told me earlier were?        | <p><b>Interviewer, please show card:</b></p> <p>Changes in production techniques or processes of production</p> <ol style="list-style-type: none"> <li>1. Introduction of new technology for production</li> <li>2. Introduction of automation of processes previously performed manually</li> <li>3. Introduction of new process of finishing, packaging or quality control</li> <li>4. Introduction of new or significantly improved production equipment not previously used</li> <li>5. Introduction of new software for production</li> <li>6. Changes in how inputs are delivered to the establishment, e.g. outsourcing transport that previously was done in-house</li> <li>7. Changes in how products are delivered to clients, e.g. outsourcing</li> <li>8. Introduction of scanning to register goods using bar codes</li> <li>9. Introduction of new software to manage inventories</li> <li>10. New or improved software or routines for purchasing, accounting or maintenance systems</li> </ol> <p><b>Interviewer, please ask:</b><br/>What would it take for you to take this innovation to the next level (country, EU or world)?</p> |
| 5c. Earlier you told me how many <b>marketing methods</b> you introduced. Can you please explain shortly what the innovations you told me earlier were?          | <p><b>Interviewer, please show card:</b></p> <ol style="list-style-type: none"> <li>1. New design, branding or packaging, including use of trademarks or brand symbols</li> <li>2. New channels to promote or sell products or services such as direct selling, internet sales and exclusive retailing</li> <li>3. New pricing systems to attract or retain customers, such as discounts, deferred payment, loyalty rewards cards</li> </ol> <p><b>Interviewer, please ask:</b><br/>What would it take for you to take this innovation to the next level (country, EU or world)?</p>   |
| 5d. Earlier you told me how many <b>organizational</b> innovations you introduced. Can you please explain shortly what the innovations you told me earlier were? | <p><b>Interviewer, please show card:</b></p> <ol style="list-style-type: none"> <li>1. Change in number of management levels</li> <li>2. Changes in communication systems</li> <li>3. Changes in production targeting and monitoring systems</li> <li>4. Changes or introduction of incentives for performance such as changes in salary or bonus determination to reward</li> </ol>   |

|  |  |
|--|--|
|  | <p>performance</p> <ol style="list-style-type: none"> <li>5. Changes in promotion practices</li> <li>6. Changes in hiring and firing practices</li> <li>7. Changes on how decisions and results are communicated across the establishment, such as new reporting systems</li> <li>8. Restructuring departments or units</li> <li>9. Changes in external relations systems</li> </ol> <p><b>Interviewer, please ask:</b><br/>What would it take for you to take this innovation to the next level (country, EU or world)?</p>   |
| 7. Please name the 3 biggest <b>drivers</b> for innovation in order of importance and tell me why are they so important to you.            | <p><b>Interviewer,</b> please attempt to classify using the examples below (<i>but do not provide these examples</i>).</p> <ol style="list-style-type: none"> <li>1. Access new and emerging markets</li> <li>2. Increase profitability along the value chain</li> <li>3. Stay ahead of standards and regulations</li> <li>4. Attract investment</li> <li>5. Increase productivity and technical capacity</li> <li>6. Other (please specify)</li> </ol>  |
| 8. Could you please provide some examples of the use of your intellectual property rights ( <b>IPR</b> )?                                  | <p><b>Interviewer.</b> Ask respondent to provide examples for the following (if used)</p> <ol style="list-style-type: none"> <li>1. Copyright</li> <li>2. Patents</li> <li>3. Trademarks</li> <li>4. Industrial designs</li> <li>5. Geographical indications</li> <li>6. Other (please specify)</li> </ol>   |
| 9. Please describe the 3 greatest <b>barriers</b> for innovation in the order of importance, and tell me why are they so important to you. | <p><b>Interviewer,</b> please attempt to classify using the examples below (<i>but do not provide these examples</i>).</p> <ol style="list-style-type: none"> <li>1. Lack of stimuli from the government</li> <li>2. Short-term focus</li> <li>3. Lack of time, resources or staff</li> <li>4. Leadership expects payoff sooner than is realistic</li> <li>5. Management incentives are not structured to reward innovation</li> <li>6. Lack of a systematic innovation process</li> <li>7. Belief that innovation is inherently risky</li> <li>8. Other (please specify)</li> </ol> |
| 10. What kinds of measures do you use to track the performance of your employees?  | <p><b>Interviewer.</b> Try to classify if the measures broadly fit any of the practices shown below and write it down.</p> <ol style="list-style-type: none"> <li>1. Changes or introduction of incentives for performance such as changes in salary or bonus determination to reward performance</li> <li>2. Changes in promotion practices</li> <li>3. Changes on hiring and firing practices</li> </ol>   |
| 11. What types of financial and non-financial targets are set for the company?   |  |
| 12. What kind of time scale are you looking at with your targets?  | <ol style="list-style-type: none"> <li>1. Up to 1 year</li> <li>2. 1 to 3 years</li> <li>3. 3 to 5 years</li> <li>4. More than 5 years</li> </ol>  |
| 13. What are your ways of <b>incentivizing</b> your <b>employees</b> ?   | <p><b>Interviewer,</b> some examples of incentivizing are shown below.</p> <ol style="list-style-type: none"> <li>1. Bonuses, paid holidays and other formal employee benefits</li> <li>2. Target-based bonuses</li> <li>3. Percentage of retail</li> <li>4. Flextime</li> <li>5. Corporate membership (discounted gym membership or access to an executive suite at your local sports arena,)</li> <li>6. Work-related social activities</li> <li>7. Incentives aligned with individual achievements or team-</li> </ol>  |

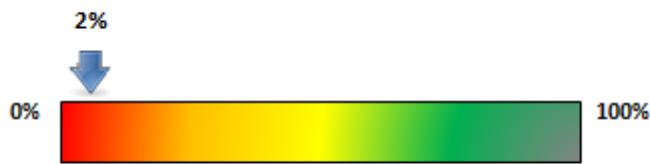
|   |  |
|---|--|
|   | <p>based success</p> <ol style="list-style-type: none"> <li>8. Workplace wellness programs</li> <li>9. Other (please specify)</li> </ol>   |
| 14a. For exporters only! How do you obtain <b>business intelligence</b> about the <b>foreign markets</b> in order to determine if your product will be innovative there?              | <p>How do you know that product you want to export is innovative in the place where you want to export it? Do you use external or internal marketing research? What sources of information do you mostly trust?</p> <ol style="list-style-type: none"> <li>1. Internal (own research)</li> <li>2. Business support institutions</li> <li>3. Private firms</li> <li>4. International institutions</li> <li>5. Mix of private and public data sources</li> </ol> |
| 14b. How do you obtain <b>business intelligence</b> about the <b>domestic markets</b> in order to determine if your product will be innovative there?                                 | <p>How do you know that product you want to sell is innovative in the market? Do you use external or internal marketing research? What sources of information do you mostly trust?</p> <ol style="list-style-type: none"> <li>1. Internal (own research)</li> <li>2. Business support institutions</li> <li>3. Private firms</li> <li>4. International institutions</li> <li>5. Mix of the source above</li> </ol>   |
| 15. What are the most important <b>business trends</b> in your sector in Poland currently?  | <b>Interviewer.</b> Please, take the answer into the context of the 10 smart specialization areas.   |
| 16. Taking that into account, what do you think are the <b>key success factors</b> for growth in the business area where your establishment operates?                                 |  |
| 17. What is the major <b>technological trend</b> affecting how this establishment innovates?  |  |
| 18. If I were to give you <b>\$1 million</b> right now and you could use it only to invest in some <b>technology</b> or <b>business area</b> , what would you invest it in and why?   |  |
| 19. Name the three most useful services by business support institutions that you have utilized or would like to obtain that would <b>enable</b> your firm to become more innovative. |  |
| 20. Where are your partners from the value chain in the world?  |  |
| Three key impressions about the company ( <b>expert's opinion about the company</b> )   | <ol style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> </ol>   |
| What was the overall quality of the technical information obtained during the interview (1 to 5 scale) ( <b>expert's opinion</b> )  | Describe how much the respondents appeared to understand the technical questions.  |
| Respondent willingness to reveal information (1 to 5 scale) ( <b>expert's opinion</b> )   | Describe if the respondent was cooperative, honest and willing to provide clear examples.  |

### B.3. Hidden Excel sheets: "Scoring" and "Gathered"

There are two more sheets that are hidden for the interviewer: "Scoring" and "Gathered". The first one, "Scoring", contains the logistic regression model that helps the interviewer assess the type of the firm. It uses the data in the real time from relevant cells from the Excel file, so it may change the outcome

during the filling out of the questionnaire. The outcome is presented on the tab “Expert assessment” in the form of a heat chart (see below) and hint of the percentage value shown above. The percentage value shows the probability that a given company is a “champion”, based on the project’s definition (see definitions in section 4.1), using data from the interview.

**Figure 3. Scoring system visualization**



*Source: The World Bank*

The second card, called “Gathered”, collects all the data from the questionnaire. The interviewer only has to input all the relevant pieces of information and answers and the card collects it automatically. It helps to use this card in order to copy the data from the questionnaires quickly and directly to the database. Sometimes the Excel file maintains old hyperlinks in the formulas and seems not to download all the data automatically. In this case, one has to delete all the hyperlinks from the formulas manually. This is not a problem when using basic Excel functions (command: “Ctrl+H” for all old references).

### **C) Defining the smart specialization(s)**

During the interview, each firm should indicate both all smart specialization(s) and subareas of smart specializations where it currently operates, plus all specializations planned for development in the near future, i.e. the next three to five years. This selection is performed using a separate card, which indicates all 10 smart specializations encompassed by the project and its subareas. A company can indicate more than one specialization; it can also select none. That is, it is not obligatory for a company to belong to a smart specialization to be eligible for participation in the survey. In terms of the subareas of smart specializations, the company can indicate one or more of these. However, if it does not find its subarea in the presented list, it might name a subarea of the smart specialization where it functions and the interviewer notes this down.

### **D) Discussion of results**

During this part the expert summarizes the discussion and draws conclusions based on the entire interview with the entrepreneur. The expert builds on the graphic presentations of the company’s answers that are represented in the charts (charts in the questionnaire appear in blue sheets) as well as other information acquired during the meeting. The role of the expert is to rely on his/her experience and knowledge to pinpoint key aspects of company’s functioning that seem to be the biggest bottlenecks or the biggest opportunities for change and development. Another aspect of this discussion is to share examples of good or bad practices that can be important for the entrepreneur in developing the business.

This discussion cannot be fully standardized as the content will depend on the general context of the meeting, identified needs and strengths/weaknesses as well as the personality of the interviewee.

### **E) Expert’s assessment**

This part of the interview is an expert’s summary of the interview and can be filled in during the interview or after the interview, but it should be done within the same day the interview took place to

ensure correct implementation of all key aspects of the interview. In this part, the expert assesses the company via a framework of five key questions regarding:

- willingness to grow
- visionary ability
- ability to change
- capacity to absorb changes
- potential to internationalize.

Moreover, the expert should be able to classify the company using one of the five firm types used by the survey. These types are: “champion”, “emerging champion”, “sleeping beauty”, “steady state” and “declining” (see definitions below). Finally, the expert should determine the specific support needed by a company, if such was identified during the interview. Finally, the expert should write down his or her subjective opinion about three key aspects about the interview and/or the company that were not caught by questionnaire questions. These will help to better understand the discussion with the company and can provide valid information for possible future contact with the company by third persons, e.g. local business support institutions that could offer services that the company seems to need.

The part devoted to the expert’s assessment is based on the expert’s perceptions and experience.

#### **4.1. Definitions of important concepts**

**Innovation** – the survey follows the definition of innovation from the Oslo Manual: *An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) to the firm.* (Oslo Manual, 3<sup>rd</sup> edition, 2005)

**Absorptive innovation** – the survey distinguishes between “new to the firm”, “new to the country” and “new to the world” innovation. Absorptive innovation covers the first two concepts.

**Original innovation** – this refers to innovation that is “new to the world”.

**R&D** – research and development undertaken directly by the firm or contracted out to research and innovation organizations is defined as creative work undertaken on a systematic basis in order to increase the stock of knowledge. Research and development is distinguished from market research and product testing by the presence of an appreciable element of novelty. So, for example, laboratory research for a new chemical compound of paint would be R&D, while market research surveys or internet surfing would not be research and development.<sup>2</sup>

**“Champion”** – a top-class company that has strong leadership, an innovation-focused mindset and a clear vision of its development. It actively monitors business, market and technology trends, systematically seeks knowledge domestically and internationally, constantly looks for new market opportunities (adopts preemptive or proactive market behaviors), follows good management practices and is strongly networked, including within its value chain (customers, suppliers).

**“Emerging champion”** – a very good company that demonstrates many features of a “champion”, but has not yet demonstrated that it can scale up its growth path and expand on its innovation track record.

**“Sleeping beauty”** – a company that exhibits several behaviors of “champions”; it is doing well and has the potential to develop quickly, but it lacks exposure to opportunities that could make it grow faster. They usually do not realize what they need to accelerate their growth or do not have access

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<sup>2</sup> EBRD (2008), *Management, Organization and Innovation Survey: Understanding the questionnaire*.

to the necessary services or skills. They typically underappreciate opportunities inherent in foreign expansion, they tend to be understaffed in the marketing and R&D areas, and they display fewer networking behaviors.

**"Steady state"** – a company that is reasonably successful, but is conservatively managed, with a low level of ambition, a distrust of outsourcing, lower networking scores, a small overseas presence and not much visionary ability. Management is risk-averse, comfortable with the status quo and passively reacts to market trends. It has a limited track record of innovation.

**"Declining"** – a company that typically scores low on dimensions of clarity of vision, growth and ambition; it is usually locked in stagnant and/or declining markets, incapable of foreign expansion/presence, has poor networking behavior, weak access to knowledge and no track record of innovation.

**Start-up** – a company less than five years old.

**Supplier's supplier** – this refers to the supply chain and considers the second/third line of supplier to the company that is interviewed.

**Innovation supply chain** – this refers to all sources a company can use as suppliers to become more innovative. The ISC approach is used to determine if the interviewee is aware of such sources and how the firm could mobilize these resources in order to create more valuable products/services (see value chain below).

**Value chain** – where value is created in the supply chain(s). This assessment is used to determine if interviewees could increase the value of products/services they sell.

**Innovation strategy** – a firm's strategy for developing and introducing innovation in the broad sense (product, process, marketing and organizational). The strategy can have either a formal (written), or informal (oral) form, however, there should be a well-based notion in the company (shared by management and staff) that such a strategy exists.

## 5. Detailed descriptions of interview's chosen aspects

### **1.1 Examples used by experts in selected questions**

It is important that experts use, very regularly, concrete examples to help interviewees understand what each question really means. Moreover, providing real-life examples facilitates the dialog and builds trust between the interviewee and the interviewer. Some concepts presented during interviews have shown higher demand for explanations. The following list provides examples of the questions and the way they are illustrated:

1. **Preemptive and proactive.** CEOs understand the difference between being reactive and being proactive (reactive businesses only react after they notice a change in the market, while proactive businesses anticipate and prepare for changes). The concept of being preemptive is more complex. It implies that the company is paving the way for completely new solutions/products/processes/services that are not in existence in its market(s). One illustration is the iPhone or the tablets where Apple came up with a new mode of consumption and communication. Apple was preemptive. Others such as Samsung and Sony. came up later with new and sometimes better solutions, but Apple still keeps the image of the front-runner. On the contrary, purely reactive firms (HTC, Blackberry) have major problems surviving.
2. **Risky behavior:** entrepreneurship is associated with risk-taking and one of the key constraints across Europe is that a large share of **entrepreneurs is risk adverse, which hampers** their ability to design and propose new solutions for their clients and for new markets. Measuring the appetite for risk helps the project discover which entrepreneurs are the most likely to enter new territories and/or – more importantly – which kind of programs would stimulate their appetite for undertaking game-changing processes in their firms. When interviewed, many CEOs claim they are comfortable taking risks. One way to measure and recalibrate such statements is

to take examples of entrepreneurs that have put their belongings as collateral to fund their growth or a new activity. This usually leads to a recalibration.

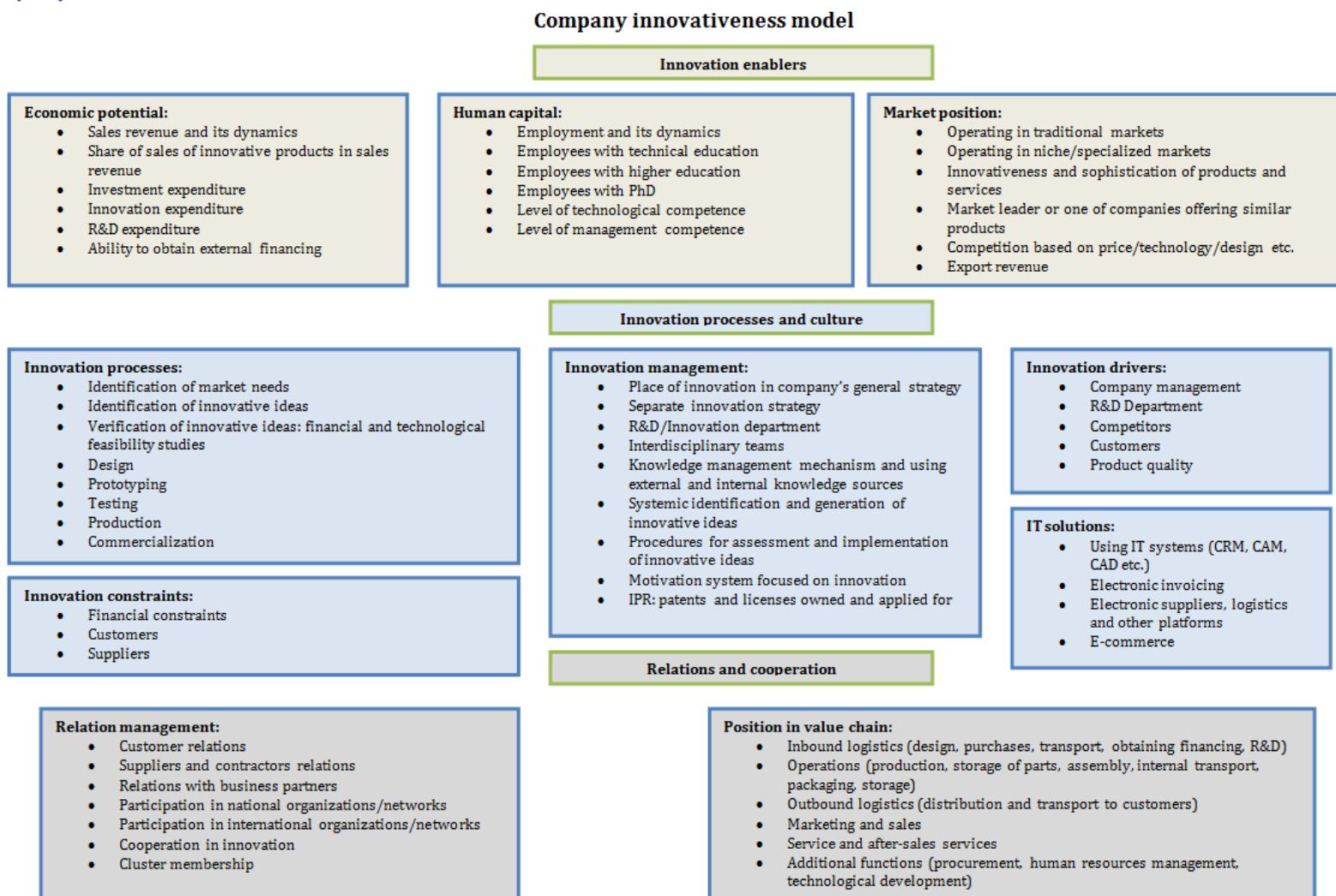
3. When considering **growth constraints**, one question is about the **managers themselves**. Most CEOs see themselves a driver for success and only a few consider their attitude could become a constraint for their teams or their markets. A number of firms that are met during interviews are reasonably successful and their growth is not a priority for the CEOs. Having a stable and successful life seems to suffice, but these CEOs are often unaware of risks coming from competitors or completely new entrants in their markets. A concrete example can be provided: firms that really have grown from small (less than 10 employees) to becoming larger (say close to 100 staff) can face problems because the entrepreneur that was able to move from 10 to 100 suddenly becomes less comfortable and efficient running a team presenting a high diversity of profiles and ambitions. Having such a discussion enables the interviewer and interviewee to determine if things could be done to overcome the issue (training, mentoring, new partners, selling the firm, etc.). It also helps the interviewer to determine if a given firm is a good candidate for receiving publicly funded support that will generate a measurable impact.

### **5.2. *A few tips for the interviewers***

- Interviews should be conducted as an open discussion between peers.
- The interviewee must feel he is benefitting. To accomplish this, provide, as soon as possible, concrete examples coming from peer firms so that the interviewee feels you understand him and the environment in which he operates.
- You do not need to be a specialist in his/her business field, but you need to demonstrate that you have experience dealing with firms presenting similar profiles. To perform such interviews, trust is key. Do not pretend to be what you are not.
- Never take for granted what the interviewee tells you. In other words, be prepared to kindly challenge him (in a positive manner) this will be one of the techniques that will allow the two of you to move from answering a long list of questions into a trustful discussion.
- Be prepared – learn your interview script and the questionnaire almost by heart. You need to be able to navigate from one subject to another and come back to sections already filled out if you have doubts or if the interviewee's thinking has evolved.
- Regularly remind the interviewee what you are doing and how you are doing it. After page 6 or 7, tell him where you stand in terms of progress in order to keep his attention high.
- When you come to the end, inform the interviewee and tell him or her that you will soon move to the analytical part.
- When terminating the interview, ask for a debrief. This could include: How did you find the interview? Did you learn something? Are you going to use something you learned? Can you provide me with a recommendation on how the interview could be run better?

### **5.3. *A company innovativeness model***

**Figure 4. Company innovativeness model**



Source: The World Bank

#### **5.4. List of questions in the crowdsourcing questionnaire**

The crowdsourcing tool uses some questions from the interview questionnaire and some new questions. The full list of questions is presented below.

| Crowdsourcing: list of questions |   |   |
|----------------------------------|---|---|
| No.                              | Question  | Answer  |
| 1.                               | What is the name of your company?   | Open  |
| 2.                               | Where is your company based (city)?   | Open  |
| 3.                               | What is the size of your company?   | Choose one:<br><ul style="list-style-type: none"> <li>• Micro (1-9 employees)</li> <li>• Small (10-49 employees)</li> <li>• Medium (50-249 employees)</li> <li>• Large (250+ employees)</li> </ul>  |
| 4.                               | How many of the employees have higher or vocational technical education (e.g. science, engineering, maths)?   | Choose one:<br><ul style="list-style-type: none"> <li>• 0%</li> <li>• 1 - 10%</li> <li>• 11 - 25%</li> <li>• 26 - 50%</li> <li>• 51 - 75%</li> <li>• 76 - 100%</li> </ul>   |
| 5.                               | What was the total revenue in 2014?   | Open  |
| 6.                               | What was the export share as % of total revenue (2014)?   | Open  |
| 7.                               | In which of following areas does your company do R&D work?  | Choose one:<br><ul style="list-style-type: none"> <li>• Medical engineering</li> <li>• Diagnostics and therapy of lifestyle diseases</li> <li>• High quality food</li> <li>• Biotech processes and products of chemicals</li> <li>• Efficient producing, storage, transfer, distribution of energy</li> <li>• Intelligent and energy saving construction</li> <li>• Modern technologies of acquiring, processing and usage of natural resources</li> <li>• Minimizing the waste including those not for recycling and material usage of waste</li> <li>• Multifunctional materials and composites</li> <li>• Automatics and robotics of tech processes</li> <li>• Other, what?</li> </ul> |
| 8.                               | • Since when do you do R&D (year)?  | Open  |
| 9.                               | What was the amount of investment spending over the last 3 years (as % of the turnover)?  | Choose one:<br><ul style="list-style-type: none"> <li>• Company does not spend money on R&amp;D</li> <li>• Less than 1%</li> <li>• 1 - 5%</li> <li>• 6 - 10%</li> <li>• 11 - 25%</li> <li>• 26 - 50%</li> <li>• 51 - 100%</li> </ul>  |
| 10.                              | How often do the following drivers help your company innovate? (please give the answer for each driver)<br><br>• Management mindset<br>• R&D department<br>• Employees' initiative<br>• Will to develop a company | Choose one:<br><ul style="list-style-type: none"> <li>• 1 – Very seldom (less than once per year)</li> <li>• 2 – Seldom (1-2 times per year)</li> <li>• 3 – Sometimes (3-6 times per year)</li> <li>• 4 – Often (7-12 times per year)</li> <li>• 5 – Very often (more often than once per month)</li> </ul>   |

|     |   |   |
|-----|---|---|
|     | <ul style="list-style-type: none"> <li>• Entry into new markets</li> <li>• Market pressure</li> <li>• Clients' expectations</li> <li>• Suppliers</li> <li>• Product quality</li> <li>• Market trends</li> </ul>   |   |
| 11. | How well do you know the national public support system?  | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1 – Very bad</li> <li>• 2 – Bad</li> <li>• 3 – Moderately</li> <li>• 4 – Good</li> <li>• 5 – Very good</li> </ul>   |
| 12. | What is the total amount of public innovation support received in last three years?   | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Less than 250,000 PLN</li> <li>• 250,000 - 500,000 PLN</li> <li>• 500,000 PLN - 1 million PLN</li> <li>• 1 million - 5 million PLN</li> <li>• More than 5 million PLN</li> </ul>  |
| 13. | <p>How often do the following factors constrain innovativeness in your company? (please give the answer for each factor)</p> <ul style="list-style-type: none"> <li>• Management quality</li> <li>• Hard skills (e.g. technical)</li> <li>• Soft skills (e.g. initiative)</li> <li>• Access to external financing</li> <li>• Clients</li> <li>• Quality of suppliers</li> <li>• Legislation</li> <li>• Lack of scientific knowledge</li> <li>• Limited access to information</li> <li>• Other, what?</li> </ul> | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1 – Very seldom (less than once per year)</li> <li>• 2 – Seldom (1-2 times per year)</li> <li>• 3 – Sometimes (3-6 times per year)</li> <li>• 4 – Often (7-12 times per year)</li> <li>• 5 – Very often (more often than once per month)</li> </ul> |
| 14. | Do you feel comfortable making risky decisions? (on a scale of 1-5)   | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1 – Very uncomfortable</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5 – Very comfortable</li> </ul>  |
| 15. | Can you make risky decisions? (on a scale of 1-5)   | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1- With the highest difficulty</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5- With ease</li> </ul>  |
| 16. | <p>How often do the following factors serve as a source of innovativeness in your company? (please give the answer for each factor):</p> <ul style="list-style-type: none"> <li>• Internal company resources</li> <li>• Universities and RDIs</li> <li>• Cluster members / networking</li> <li>• Clients</li> <li>• Suppliers</li> <li>• Central government</li> <li>• Local government</li> <li>• Internet</li> <li>• Exhibitions, fares</li> </ul>  | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1 – Very seldom (less than once per year)</li> <li>• 2 – Seldom (1-2 times per year)</li> <li>• 3 – Sometimes (3-6 times per year)</li> <li>• 4 – Often (7-12 times per year)</li> <li>• 5 – Very often (more often than once per month)</li> </ul> |

|     |   |   |
|-----|---|---|
|     | <ul style="list-style-type: none"> <li>• Technical literature</li> <li>• Seminars, lectures</li> <li>• Other, what?</li> </ul>  |   |
| 17. | <p>How many (...) innovations have you introduced in the last 3 years? (please give the answer for each factor):</p> <ul style="list-style-type: none"> <li>• Product</li> <li>• Process</li> <li>• Marketing</li> <li>• Organizational</li> </ul>                  | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• 1-2</li> <li>• 3-5</li> <li>• 6-10</li> <li>• More than 10</li> </ul>                             |
| 18. | <p>To the best of your knowledge, which of your (...) innovations are new to the (...)? (please give the answer for each factor):</p> <ul style="list-style-type: none"> <li>• Product</li> <li>• Process</li> <li>• Marketing</li> <li>• Organizational</li> </ul> | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• Firm</li> <li>• Country</li> <li>• Europe</li> <li>• World</li> </ul>   |
| 19. | <p>Can you give examples of product innovations you have introduced?<br/>What kind of process innovations are you implementing?</p>   | Open  |
| 20. | <p>What kind of innovations would you have introduced, had you had the money? How much money do you need for it?</p>  | Open  |
| 21. | <p>How do you assess the efficiency of public innovation support in Poland?</p>   | <p>Choose one:</p> <ul style="list-style-type: none"> <li>• 1 – Very bad</li> <li>• 2 – Bad</li> <li>• 3 – Moderately</li> <li>• 4 – Good</li> <li>• 5 – Very good</li> </ul> |
| 22. | <p>How should public innovation support in Poland look?</p>   | Open  |
| 23. | <p>What else should we ask about in a future survey?</p>  | Open  |
| 24. | <p>Please enter the e-mail address at which we can contact you in the future</p>  | Open  |