

Expression of Absorptive Capacity in a Regional Innovation System of Lithuania: an Approach to Sampling for Qualitative Research

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Abstract

Absorptive capacity is the one of key phenomena, explored by researchers interested in innovation management. Each regional innovation system consists of a variety of interlinked actors – institutions characterized by various specifics. The article presents a qualitative approach to the expression of absorptive capacity in a regional innovation system and identifies the main sampling challenges. Valid and credible results of representative sampling for qualitative research on the expression of absorptive capacity in a regional innovation system of Lithuania should follow a five-step process. It ensures multidimensional approach to the specificity of the analyzed object as well as its context. The article provides evidence on how this process has been adjusted for this particular empirical research in Lithuania.

Keywords: regional innovation system, absorptive capacity, sampling.

Introduction

Contemporary challenges, such as globalization, an innovation-driven economy, changes in cross-sectorial relations, forces science, business organizations as well as government institutions to look for new ideas, possibilities and activities in regions because of a need to survive in fierce competition and changes in a market. “Extracting new ideas and combining them with existing knowledge is one of the major processes in innovation activities” (Seo, Chung, Woo, Chun and Jang, 2016, p. 1), therefore, absorptive capacity as the main presumption enabling such innovative processes is the main stimulus for innovativeness in organizations, regions or even countries seeking to become more successful and developed. Absorptive capacity increases the speed, frequency and size of innovations, which create new knowledge as part of

absorptive capacity. It is very important for small or developing countries (such as Lithuania¹) and their regions.

Regions must find their own competitive advantage and resources for innovative activities. An approach to a regional innovation system (hereinafter RIS) especially emphasises economic and social interactions between the actors of a RIS, institutions able to create and apply knowledge and ensure continuous organizational learning and transformation, their absorptive capacity plays the main role in a sustainable growth of organizations and gain a competitive advantage (van Hemert and Iske, 2015; Dixon and Day, 2007). Therefore, innovative activity of a RIS should be analysed in the content of inter-organizational and cross-sectorial collaboration where all participants and their contributions are significant for the final result of knowledge absorption.

Many researchers analyzed the phenomenon of absorptive capacity in different contexts at individual, organizational, regional, national, sectorial, etc. level. There are some substantiated methodologies to analyze the expression of absorptive capacity, mostly in regions of developed countries (Döring and Schnellenbach, 2004; Uotila, Harmaakorpi and Melkas, 2006; Mahroum, Huggins, Clayton, Pain and Taylor 2008; Abreu, Grinevich, Kitson and Savona, 2009; Halkier, Dahlström, James, Manniche and Olsen, 2010; Autant-Bernard, Fadaïro and Massard, 2013; van Hemert and Iske, 2015). The majority such research use a quantitative research strategy adapted to a case of a particular RIS

¹ International Monetary Fund (IMF) added Lithuania to the list of the advanced economies for the first time just in 2015 (World Economic Outlook..., 2015, pp. ix).

of a particular country. A qualitative methodological approach (case study, Delphi method) was used only by Uotila, Harmaakorpi & Melkas (2006) to analyze Lahti region, Finland; the authors outlined the principles and practical means how absorptive capacity regarding future-oriented knowledge could be enhanced in multi-actor innovative networks. However, there was a clear need to provide the main principles and methodology of sampling for qualitative research on a RIS of a small country (such as Lithuania) and reveal two main aspects: the dimension of absorptive capacity in a RIS and a variety of its participants. Moreover, there is still a lack of research on the sampling methodology.

The scientific problem of this paper can be identified as a question: *how can the expression of absorptive capacity in a regional innovation system be analyzed in qualitative research with a representative sample to reveal the specificity of absorptive capacity in a RIS of a small country?* **The aim** of this paper is *to present a valid and representative sampling for qualitative research on the expression of absorptive capacity in a RIS of a small country.* **The objectives** are as follows: 1) to define the concept of absorptive capacity in a RIS; 2) to identify theoretical and methodological approaches to sampling for qualitative research on absorptive capacity in a RIS; 3) to provide empirical evidence how this sampling process was used in research on absorptive capacity in a RIS of a small country (Lithuania). **Relevance** and **novelty** of this research is that it shows how absorptive capacity in a RIS has been analyzed using a five-step sampling in a particular research field, identifies possibilities to substantiate the sample of experts who represent RIS actors and reveals the dimensions of absorptive capacity as well as a variety of RIS participants. The following methods were used: literature analysis, systematization, comparison and synthesis. A qualitative methodological approach tested in the context of Lithuania, a small European country, practical evidence and insights are presented in the paper.

The concept of absorptive capacity in a regional innovation system

A qualitative research approach requires that the concept of absorptive capacity in a RIS, its main dimensions and peculiarities should be identified and described. Thus, the concept of absorptive capacity, the concept of a RIS, its structure and components will be defined and described.

It is assumed that an innovation system can be viable just by realizing two main capacities: absorptive capacity (the ability to attract and absorb

good ideas from outside) and development capacity (the ability to create new knowledge and exploit it for the development of new products or services). Absorptive capacity is described as the first step in innovative activity or even a precondition for innovations. It is stated that absorptive capacity enhances the prosperity, operational efficiency and effectiveness of an organization, region and country. Various authors define the concept of absorptive capacity a little bit differently. But the analysis of the modern concept of absorptive capacity helped identify *three main dimensions*:

- *Access to external knowledge.* It is the capacity to access, human knowledge, information, intelligent goods and innovation through global networks and various channels enhances creativity and human potential and promotes building of the knowledge driven economy (Mahroum et al., 2008; Noronha and Malcolm, 2010). Speaking about regional capacity the capacity to access external knowledge depends on foreign trade, foreign investment regulations, number of knowledge-intensive companies, public and private investments in the infrastructure of a region, neighbouring regions and a small country in general. Regions with small scientific, economic and social potential can enhance an access to external knowledge through: clusters (structures of collaborating institutions, by generating intellectual knowledge, accelerating learning and knowledge transfer), local culture (the level of trust, social cohesion, etc.), economic activity (international relations, collaboration, foreign trade, foreign investment, mergers with multinational companies, investment in knowledge). That is particularly important for developing small countries.
- *Knowledge anchoring.* It is the capacity to access external knowledge of people, organizations, local or global clusters, local or global networks, absorb and apply it (Halkier et al., 2010; Mahroum et al., 2008). Interpersonal, inter-organizational, cross-sectorial relations, networking and learning are the main conditions seeking to strengthen the process of knowledge anchoring.
- *Knowledge diffusion.* It is the capacity to integrate new knowledge into old knowledge, absorb and transfer it and create added value. RIS participants, involved in this process, should be motivated, provided with resources and have necessary abilities (Zhuang, Chen and Feng, 2011).

This modern concept includes both the perception of an individual (organizational) capacity to

learn and acquire new knowledge as well as motivation to do so (Mahnke, Pedersen and Venzin, 2005). All three mentioned components are interlinked and integral. Accordingly, the interferences and obstacles in one dimension of knowledge absorption have an impact on the other two and the general level of the expression of absorptive capacity in a RIS.

The concept of a regional innovation system (RIS) can be revealed through three approaches to a RIS: systematic, regional and, finally, institutional. Based on the Systems theory, a RIS should be understood as a structurally possible to divide but functionally indivisible entirety (group) of interlinked elements interacting because of the common goal and having external relations with other systems or their subjects (Laszlo and Krippner, 1998; Casey, 2006; Bawden, 2010). According to Carlsson (2006) and Lundvall (2010), a RIS as a social and dynamic innovation system consists of interlinked, institutions which are consistently learning and creating, accumulating and transferring knowledge have abilities and human products needed for new ideas and technologies. The scale of a RIS can be limited by the boundaries of the region as a historically formed individual, unique and complex sub-national territorial unit (Burbulytė, 2005; Kilijonienė, 2010). A RIS must act like a network of institutions having the common goal, i.e. the development of R&D and innovative activities leading to socio-economic welfare of the region (Seo, 2006). This definition of a RIS has been formulated having done theoretically multidimensional analysis on the basis of interpretations of a group of researchers (Petraitė, 2009; Wojnicka, Rot, Tamowicz and Brodzicki, 2002; Doloreux and Parto, 2004; Seo, 2006; Bergman and Usai, 2009); a RIS can be understood as a network of collaborating institutions (private and public formal institutions, static elements of the system), which, on the basis of organizational and institutional agreements, relations and links (dynamic elements of the system), contribute to knowledge generation (initiation and creation), exploitation (importing and adoption of new technologies and knowledge) and diffusion and thus increase regional innovativeness and competitiveness. It must be emphasized that each RIS is unique and different not only because of the internal and external, legal and administrative environment, economic and social, relations and activity of its participants (other RISs, national innovation system, international organizations) but rather because of the structure of a RIS (its participants).

The structure of a RIS is based on a formal approach to institutions as organized units. It is said in research (Rodrik, Subramanian and Trebbi,

2004; Bourguignon and Sundberg, 2006; Narula, 2004; West, Noveck and Sirianni, 2009) that RIS participants (institutions) create the infrastructure, macroeconomic, human resources, socio-cultural, etc. environment. The starting point for absorptive capacity development is innovation. The main rules of interaction between various economic actors within and outside the region should be established. An innovation culture should be created to make an influence on the dynamics of the learning process. New knowledge creation as well as existing knowledge diffusion are important. Existing problems should be identified, successful institutional decisions should be evaluated because they can not be applicable in other environments, inter-institutional collaboration should be promoted. The goal of innovation policy is the creation of common wealth.

The theoretical background for sampling in qualitative research is an access to the institutional dimension (formal institutions). The well known *Triple Helix model* was adapted seeking to identify RIS participants. This model presented by Etzkowitz and Leydesdorff (2000) remains one of the most popular models seeking to explain processes and relations between three main actors *University-Industry-Government* (Etzkowitz and Zhou, 2006; Viliūnas, 2006; Etzkowitz, 2007; Balász and Leydesdorff, 2011; Leydesdorff, 2012; Leydesdorff and Ivanova, 2016). Markovich and Shinn (2011) proposed the fourth element, *society*, on the basis of contemporary economic, cultural, organizational and ideological changes in various countries. Due to the specificity of a RIS as well as the new organizational forms contributing to the implementation of innovation policy the Triple Helix model became more complex (see Fig. 1).

The *Triple Helix* model consists of such main components:

- *Academia*, which includes more than just regional universities. Knowledge creation and employment can be supported by other institutions, such as colleges, continuing and vocational training institutions.
- *Business*, which includes industry companies as well as other enterprises, such as private and international companies, banks and financial institutions and creates economic conditions for the development of a RIS.
- *Government*, which includes government institutions (local, regional and even national) that formulate and implement innovation policy (ministries, municipalities, tax offices, etc.).
- *Other institutions*, a conceptually integral part of other three mentioned components which includes more complex institutions

and units, such as clusters, R&D councils and associations, private and public organizations (public laboratories, technology transfer organizations, joint research institutes, patent bureaus, educational organizations), innovation (science and business) support institutions (state

and universities' research institutes, integral science, studies and business valleys, science and technology parks, innovation centres and agencies, business incubators, business information centres, etc.) (Petraitė, 2009; Juknevičienė, 2015).

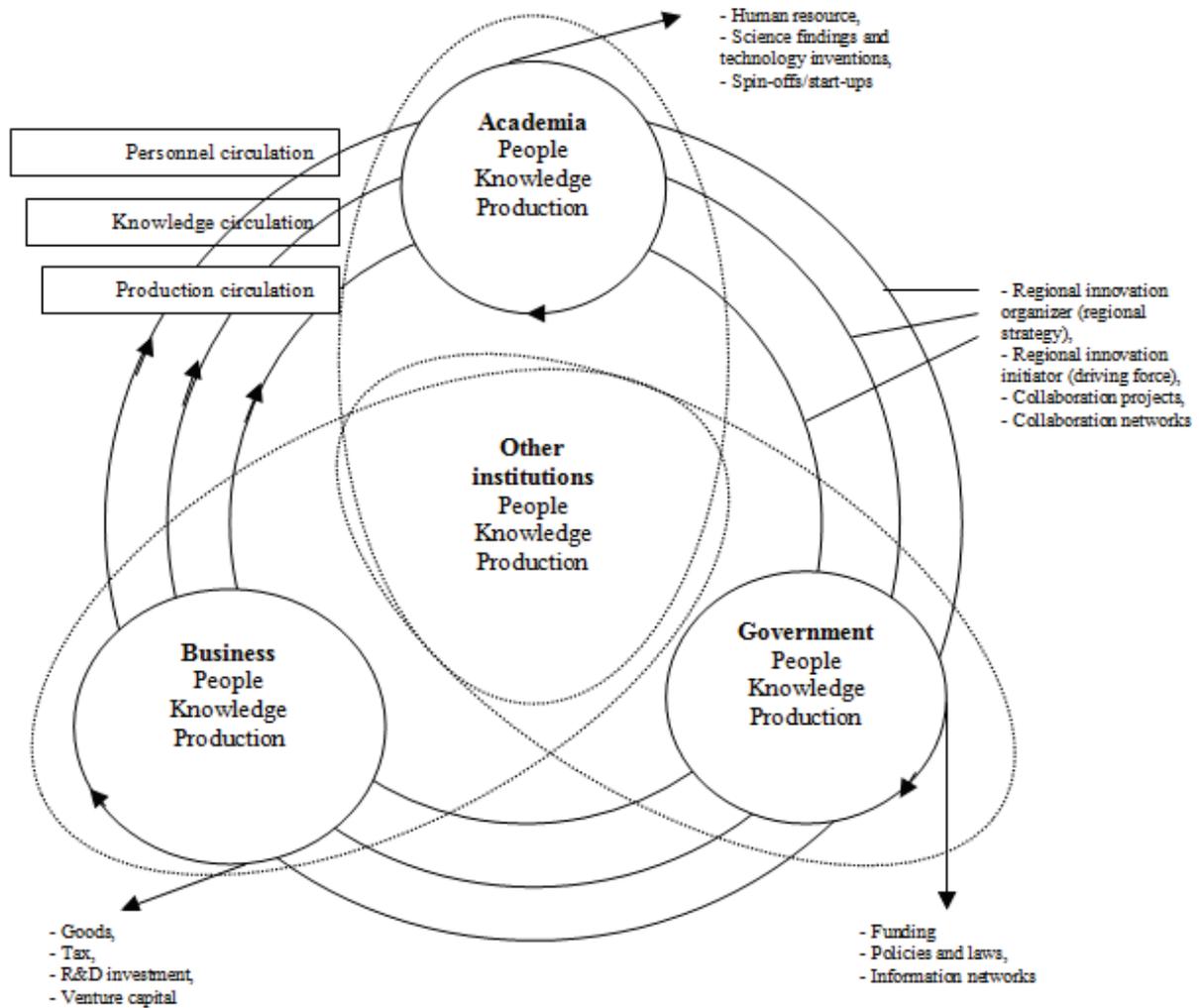


Fig. 1. Triple Helix circulation at regional level

Source: adapted from Etzkowitz (2007).

The Triple Helix model reflects the structure of a RIS as well as the interaction (circulation) processes between different spheres (sectors). Each component has its own absorptive capacity which has influence on absorptive capacity in a RIS as a whole. All actors are interdependent. There are no clear boundaries between separate components; therefore the general level of absorptive capacity in a RIS depends largely on the quality of inter-organizational and cross-sectorial collaboration. This approach reveals primary presumption of qualitative research complexity on the expression of absorptive capacity in a RIS of a small country.

Sampling for qualitative research on absorptive capacity in a RIS: theoretical and methodological issues

As it has been noted in the Introduction, many researchers analyzed absorptive capacity in a RIS using quantitative methods and only few of them used a qualitative methodological approach. There are several reasons why qualitative research is rare. Firstly, quantitative research is more valued or prioritized by some scientific schools and particular countries. Secondly, quantitative data is more accessible, easily collectable and comparable. Thirdly, qualitative research requires very detailed

and long preparation meanwhile quantitative research is less complex: it is easy to determine the number of RIS actors (institutions), their total number in the region, choose a data collection method the number and length of data collection sessions, the time period over which data should be collected (Shenton, 2004). Fourthly, qualitative research has some drawbacks: informants not always want to take part in an interview, it is not easy to access them, set time and place of interviews, etc.). Fifthly, it is difficult to ensure validity and trustworthiness (credibility, dependability, transferability, confirmability (Rolfe, 2006)) in qualitative research. And, last but not least, is the issue of reliable interpretation of collected data. These and other drawbacks in qualitative research explain why it is rarely used.

Nevertheless, qualitative research helps explain and interpret collected data of quantitative research (Žydzūnaitė, 2007). Besides, “qualitative

research consists of many different endeavors, many of which are concerned with the ‘objective’ (i.e. scientific) study of realities” (Silverman, 2013, p. 6) and, as regards a RIS, it “provides a stronger basis for analysis and interpretation because it is grounded in the natural environment of the phenomenon” (Srivastava and Thomson, 2009, p. 73). Qualitative research based on the values of the informants and researcher reveals a realistic, comprehensive and subjective understanding of phenomena (Neale, Allen and Coombes, 2005). Thus, qualitative research is the most appropriate research strategy on absorptive capacity in a RIS.

On the basis of the reviewed and generalised scientific literature as well as on the previous research of the author of this paper, a sampling strategy for qualitative research on absorptive capacity in a RIS has been developed. It consists of five main steps (see Fig. 2).

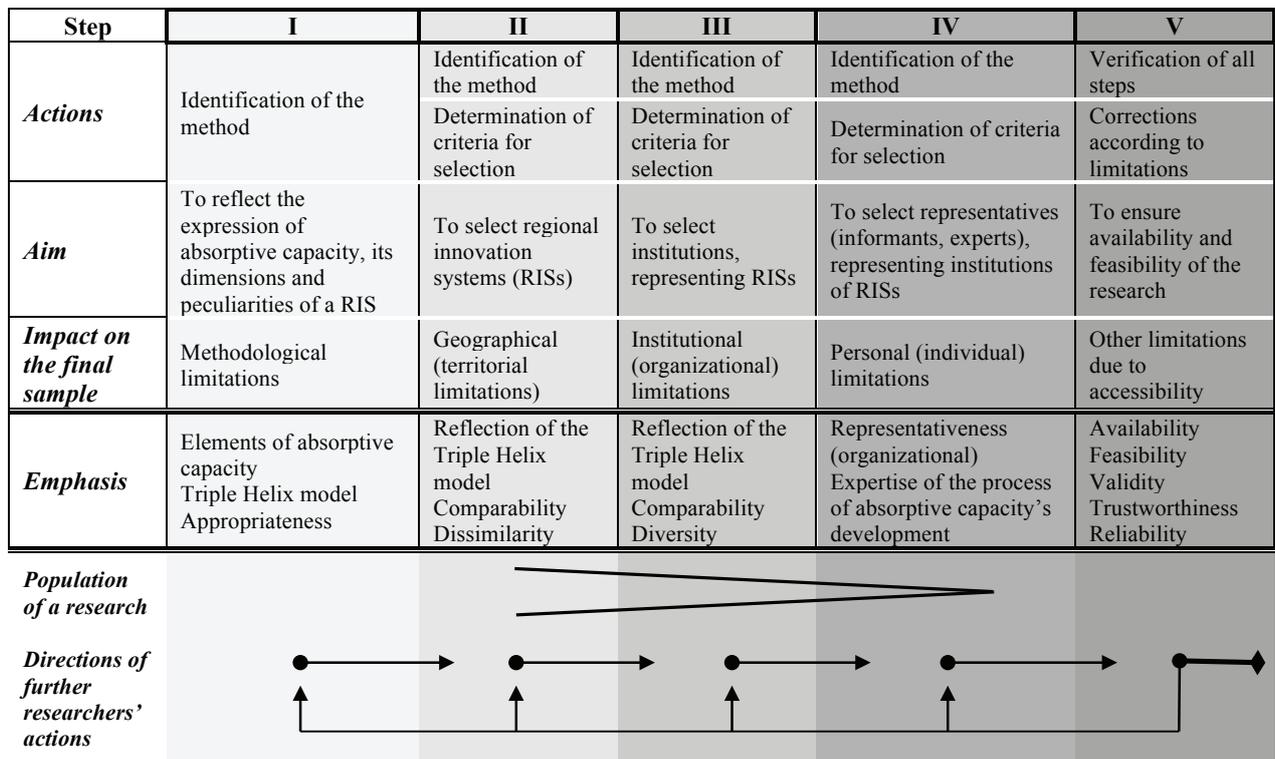


Fig. 2. A five-step sampling procedure for qualitative research on absorptive capacity in a RIS

Source: author's own work.

It should be emphasized that the steps (beginning with the second and finishing with the fourth) reduce the number of informants and make a positive impact on the sampling process.

Step 1: *identification of the method*. Seeking to identify assumption of and obstacles to the expression of absorptive capacity in a RIS various qualitative research methods can be chosen. One of the most appropriate methods to reveal the

multidimensionality of absorptive capacity and the complexity of a RIS is focused semi-structured individual interviews with experts. This method allows the researcher to collect detailed, systematic data informally communicating with respondents (experts) of different competencies and values, put additional questions and carry out deductive analysis of verbal data (Bitinas, Rupšienė and Žydzūnaitė, 2008; Bitinas, 2006; Kardelis, 2002). All that allows

the researcher to carry out a comprehensive and integrated analysis of a RIS of a small country, such as Lithuania.

Step 2: *identification of the method and determination of criteria for selecting regional innovation systems.* Research on innovative regions using a case study (Abreu et al., 2009; Uotila et al., 2006) does not provide any information on regions that do not innovate to become competitive. Regional disparities in a small country should be taken into account when comparing absorptive capacity, the level of innovativeness of regions although their social, economic and institutional environment is similar. Using this research logic, two different regions, an innovative one and an insufficiently innovative one, can be selected. A multi-criteria (geographic, demographic, economic, institutional and infrastructural) selection method can be used (Juknevičienė, 2015).

Step 3: *identification of the method and determination of criteria for selecting institutions.* The presented Triple Helix model can be used as a tool to diagnose the relationship between institutions, academia, business, government and other (science, research and business support) institutions. Several groups of criteria were developed:

- Criteria for selecting academic institutions (regional localization, main activity – science and studies, etc.);
- Criteria for selecting business institutions (regional localization, field of activity (manufacturing or service), success in innovativeness (obtained/not obtained funding of innovation projects), etc.);
- Criteria for selecting government institutions (national/regional localization, field of responsibility – implementation of national innovation policy, etc.);
- Criteria for selecting other (science, research, business support) institutions (national/regional, of various types, field of responsibility: innovation support inter-organizational, cross-sectorial collaboration, etc.) (Juknevičienė, 2015).

Step 4: *identification of the method and determination of criteria for selecting representatives (experts).* The number of involved experts depends on the research aim, similarities, differences and uniqueness of the interviewees, willingness to provide or to compare results, the level and number of aspects time limit, institutional requirements (Baker & Edwards, 2012). Experts may be selected on the basis of their position, functional responsibility, involvement in the development of the organization's values, networking within and outside

the organization (Littig, 2008; Welch, Marschan-Piekkari, Penttinen and Tahvanainen, 2002). Criteria used to select interviewees (Juknevičienė, 2015): position (director, leader, manager, etc., that allowed to present a personal and organizational attitude), work experience in the institution (not less than 5 years), duties and/or responsibilities in relation to knowledge absorption and/or activities (management, coordination, expertise, assessment, decision making, reporting, etc.).

The last but the most important is step 5: *verification of all mentioned steps in the research process and corrections according to limitations.* This step is very important seeking to substantiate a qualitative methodological approach because, despite the validity of the initial idea, limitations may arise in the sampling procedure. Therefore, the researcher should be prepared to face challenges, find solutions and make necessary changes, especially in the mentioned steps and selection criteria.

If the sampling procedure in steps 1-4 is linear (all outcomes of made decisions lead to a next step), the last step 5 is unique. It can take two directions: the “*moving forward*” direction leads to the final determination of research methodology, the “*moving back*” direction may be taken because a new method and/or criteria were identified in this step. The best sampling scenario (in terms of time limits and human resource costs) would be the justified, available and feasible “*moving forward*” direction. Of course, in case of an “unexpected” situation the “*moving forward*” direction changes to the “*moving back*” direction, the sample (institutional, individual) or the environment change and the researcher has to make a decision to go back to steps 3-4 or even step 2 in the sampling procedure. The most unsuccessful scenario would be going back to step 1 in the sampling procedure or even changing the research strategy from qualitative to quantitative research.

Such are theoretical and methodological implications of sampling for qualitative research on absorptive capacity in a RIS. Taking into account that this methodological approach to sampling was tested in the context of a small European country (Lithuania), several challenges and practical solutions are provided in the next section of this paper.

Sampling for qualitative research on absorptive capacity in a RIS of Lithuania: challenges and solutions

Sampling challenge arises only in the process of a particular research. In research ‘Development of regional innovation system’s absorptive capacity’ conducted by Vita Juknevičienė, the author of this

paper, in 2015, a five-step sampling procedure was used (see Fig. 3). Challenges and solutions are provided further.

Step 1: identification of the method. Focused semi-structured individual interviews with experts was a challenge because valid instruments to reveal the complexity of absorptive capacity had to be developed. In accordance with the Triple Helix model, five questionnaires were designed for each group of institutional representatives: academia (1), business (1), government (1), other (support) institutions (2 at national and regional level)). All those instruments had to reveal: a) all dimensions of absorptive capacity (knowledge access, knowledge anchoring and knowledge diffusion); b) the

levels of the expression of absorptive capacity at organizational, inter-organizational, regional and national levels; c) the specificity of the relations between the components of the Triple Helix model; d) the evaluation of current situation in the organization, region and country and perspectives (needs and wishes for development). The interview process was quite long (lasted approximately 60-90 minutes with each expert), difficult to manage because of its multi-dimensionality. The researcher had to prepare in advance. One more challenge was a time limit for carrying out research thus it was decided to reduce the sample by including additional selection criteria.

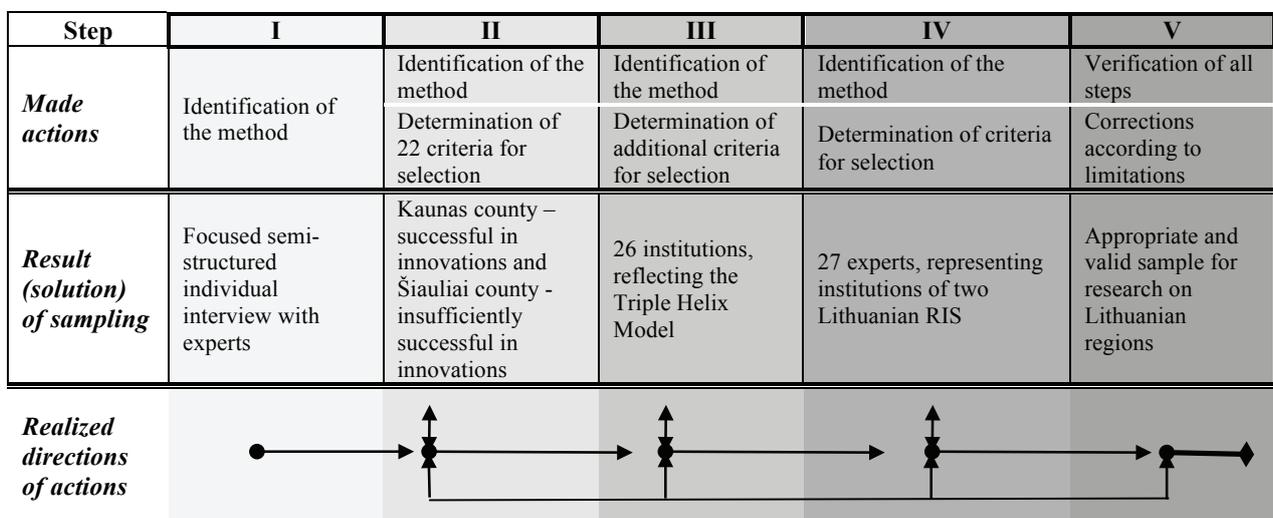


Fig. 3. A five-step sampling procedure for qualitative research on absorptive capacity in a RIS of Lithuania

Source: author's own work.

Step 2: identification of the method and determination of criteria for selecting regional innovation systems. Evidence supporting that Lithuania fulfils criteria for a small country (area – 65.3 thousand km², population – 2.872 million people, GDP – 7.2 billion Euros (2015), takes fifth places from the end of the list of EU members) had to be prepared. In all reports on innovation, Lithuania is considered as one region although there are 10 counties. The researcher used the NUTS classification (at NUTS level 3, counties can be classified as regions). 22 different criteria reflecting geographical, social (demographic), economic, institutional and infrastructural specificities of the regions (respectively 4, 4, 6, 6 and 2) were established, applied to sampling and two regions were selected: an innovative region – Kaunas county and an insufficiently innovative region – Šiauliai county.

Step 3: identification of the method and determination of criteria for selecting institutions. In accordance with the Triple Helix model, the research sample consisted of academia, business, government and other (science, research and business support) institutions. The selection procedure of appropriate institutions and their accessibility was a challenge. Academia challenge: there was a big number of universities in the innovative region and only one in the other region, a similar situation was with colleges thus it was decided to include an additional criterion – the institution had to be granted an authorization to carry out doctoral studies (4 institutions were selected). Business challenge: a) there was a big number of successfully performing companies in the regions but the question was how their success in innovations can be measured; b) businesses that failed innovative projects could not be contacted (many went bankrupt or their representatives refused

to give an interview). It was decided to interview only successful companies and an additional criterion was included – the company had to be the winner of the national awards for innovation or innovative products. Not all identified successful innovative businesses agreed to give interviews (because of a lack of time, were busy or showed no interest). Almost all companies that agreed to give interviews were manufacturing and service companies therefore the criterion was changed – “manufacturing/service company” instead of “manufacturing or service company”. Finally the sample included 4 companies, 2 from each region. Government challenge: two ministries are responsible for innovation policy in Lithuania so 2 government institutions were included in the sample. Other institutions challenge: a) their types and number varied in the regions; b) support institutions were of various importance, (national and regional level) thus, it was decided to include more institutions of various types of support (their number was different in the regions) to represent both the national and regional level (6 national and 10 regional innovation, science and business support institutions). Finally, 26 institutions were selected.

Step 4: identification of the method and determination of criteria for selecting respondents (experts). The criteria for selecting respondents were defined but the researcher faced challenge. Firstly, not all experts who met the criteria agreed to give an interview (they recommended their colleagues but not all of them met the criteria, were specialists but did not hold the position of manager or director, had shorter work experience, etc.). It was decided to select those respondents who met the third criterion. Two experts wanted to give an interview simultaneously and complement each other (that was provided). The researcher had to wait long to conduct interviews although they were scheduled in advance. Besides, several respondents wanted to get a transcription of their interview and make corrections to use them. In accordance with the research ethics principles and prior arrangements the researcher arranged that the experts could read the first version of their interview and make corrections (it should be noted that those were minor corrections). Finally 27 experts (4 representatives of academic institutions, 5 – of business institutions, 6 – of government institutions, 6 – of national business and innovation support institutions, 9 – of regional business and innovation support institutions) were selected.

Step 5: verification of all mentioned steps of the research process and corrections according to limitations were integrated into steps 4-5. Thus, actions taken were interactive rather than linear. The decision to integrate Step 5 into the previous

steps was successful and allowed the researcher to have the sample that reflects the specificity of the components of a RIS in accordance with the Triple Helix model, ensured validity, representativeness and trustworthiness and, most important, reflected the structure of a RIS.

Conclusions and discussion

1. The concept of absorptive capacity in a RIS of a small country encompassing three main dimensions: access to external knowledge, knowledge anchoring (the capacity to access internal knowledge) and knowledge diffusion (the capacity to integrate new knowledge into old knowledge, absorb and transfer it and create added value) was developed. All those three dimensions were identified at both, organizational and regional, levels. It was found that all institutions as interlinked and interdependent RIS participants are responsible for the development of absorptive capacity in a RIS of a small (developing) country. It was proved that the Triple Helix model is the most appropriate theoretical framework to analyze RIS absorptive capacity and an approach to institutional sampling for a qualitative research is effective. It was established that all institutions in a RIS play an important role in absorptive capacity development, initiation and implementation of knowledge access, knowledge anchoring and knowledge diffusion depend on organizational capacities as well as on the region location, the political, social, economic, technological environment. The Triple Helix model is the main theoretical framework of qualitative research.
2. A five-step sampling procedure for qualitative research on absorptive capacity in a RIS of a small country is as follows: 1) identification of the method, 2) identification of methods and determinations of criteria for selecting regional innovation systems, 3) identification of the method and determination of criteria for selecting institutions, 4) identification of the method and determination of criteria for selecting respondents (experts), 5) verification of all mentioned steps of the research process and corrections according to limitations. All those steps take the linear direction but addressing a challenge the direction can change.
3. Sampling challenge: access to data and respondents, research duration, human factor, etc. Problems were solved in the research process, by making changes in the environment and criteria, Step 5 was integrated into steps 4-5,

the research direction changed from linear (in theory) to interactive (in empirical research).

4. Assumptions that can form the basis for further research. In Step 2 more than two regions could be selected, a case study of one region could be carried out, comparative research on similar profile regions in different countries could be conducted. In Step 3: a bigger number of formal institutions could be selected by involving business and education institutions that, failed innovative projects for one or another reason. In Step 4: not only university, research institution representatives but also college, even vocational and training school representatives could be selected for interviews. All that may have a direct impact on a research strategy and contribute to the development of a five-step sampling procedure in the future.

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Regioninės inovacijų sistemos absorbcinio gebėjimo raiška Lietuvoje: kokybinio tyrimo imties parinkimo aspektas

Santrauka

Šiandieniniai iššūkiai (globalizacija, inovacijomis grįsta ekonomika, tarpsektorinių santykių kaita) privertė mokslo, verslo ir valdžios institucijas ieškoti naujų idėjų, galimybių ir veiklų regionuose, padėsiančių įveikti nuožmią konkurenciją ir rinkos pokyčius. „Naujų idėjų išgavimas ir jų derinimas su jau egzistuojančiomis žiniomis yra viena svarbiausių prielaidų inovacijų veikloje“ (Seo ir kt., 2016, p. 1). Absorbcinis gebėjimas, kaip viena svarbiausių tokios veiklos prielaidų, yra pagrindinis organizacijų, regionų ir net šalių inovatyvumo, sėkmingumo ir vystymosi stimulas. Tai ypač svarbu mažoms arba besivystančioms šalims (tokioms kaip Lietuva, kuri tik 2015 m. Tarptautinio valiutos fondo buvo priskirta prie išsivysčiusios ekonomikos šalių (*World Economic Outlook*, 2015, pp. ix)).

Regionai privalo identifikuoti savo konkurencinį pranašumą ir rasti pakankamai išteklių inovatyvioms veikloms. Regioninės inovacijų sistemos (toliau – RIS) koncepcijos ypač akcentuoja ekonomines ir socialines sąveikas tarp veikėjų – RIS dalyvių (institucijų), turinčių pakankamai pajėgumų kurti ir taikyti naujas žinias, užtikrinti besitęsiantį organizacinį mokymąsi ir transformaciją, kai absorbcinis gebėjimas aktyviai dalyvauja organizacijos darnaus vystymosi ir konkurencinio pranašumo įgijimo procese (van Hemert ir Iske, 2015; Dixon ir Day, 2007). RIS inovacinės veiklos analizuojamos tarporganizacinio ir tarpsektorinio bendradarbiavimo kontekste, kai visų dalyvių veikla labai svarbi galutiniam žinių absorbcijos rezultatui.

Daugelis tyrėjų analizavo absorbcinio gebėjimo fenomeną skirtingais pjūviais: individualiu, organizaciniu, regioniniu, nacionaliniu, sektoriniu ir pan. Buvo pateiktos ir pagrįstos metodologijos, galimos naudoti atliekant regionų absorbcinio gebėjimo raiškos analizę, tačiau dauguma jų buvo pritaikytos išsivysčiusių šalių kontekstui (Döring ir Schnellenbach, 2004; Uotila ir kt., 2006; Mahroum ir kt., 2008; Abreu ir kt., 2009; Halkier ir kt., 2010; Autant-Bernard ir kt., 2013; van Hemert ir Iske, 2015). Dauguma šių tyrimų pagrįsti kokybine tyrimo prieiga, pritaikyta konkrečios RIS konkrečioje šalyje atvejui. Kokybinė tyrimo prieiga (atvejo analizė, Delfi metodas) geriausiai atspindima 2006 m. atliktame suomių mokslininkų (Uotila, Harmaakorpi ir Melkas) tyrime, kuriame buvo analizuojamas vienas Suomijos regionas. Autoriai išskyrė pagrindinius principus ir pateikė praktines išvagas, kaip su į ateitį orientuotomis žiniomis yra susijęs absorbcinis gebėjimas ir kaip jis galėtų sustiprinti inovacijų tinklus, kuriuose dalyvauja įvairūs veikėjai. Tačiau buvo pasigesta metodologinės kokybinės prieigos (pateikiančios pagrindinius imties sudarymo ir pagrindimo principus), įgalinančios pritaikyti RIS mažoje šalyje (pvz., Lietuvoje) ir atspindinčios du esminius išskirtinumus: absorbcinio gebėjimo dimensijas ir RIS veikėjų įvairovę. Trūko

ir tyrimų, pateikiančių metodologinius paaiškinimus dėl imties pagrindimo proceso.

Taigi, šio straipsnio *mokslinė problema* išreiškiama klausimu, *kaip regioninės inovacijų sistemos absorbcinio gebėjimo raiška gali būti analizuojama kokybinio būdu parenkant reprezentatyvią imtį, atskleidžiančią mažos šalies RIS absorbcinio gebėjimo specifiką? Straipsnio tikslas yra pristatyti mažos šalies RIS absorbcinio gebėjimo raiškos kokybinio tyrimo validžios ir reprezentatyvios imties pagrindimo procedūrą*. Tikslui realizuoti pasitelkiami šie **uždaviniai**: 1) apibrėžti RIS absorbcinio gebėjimo konceptą; 2) identifikuoti RIS absorbcinio gebėjimo kokybinio tyrimo imties pagrindimo teorines ir metodologines išvagas; 3) pateikti praktines (empirines) išvagas apie pristatomos imties pagrindimo procedūros taikymą mažos šalies (Lietuvos) RIS atveju. Straipsnio *aktualumą* ir *naujumą* atspindi kokybinė originali inovacijų sistemos absorbcinio gebėjimo tyrimo prieiga, kadangi pristatoma penkių žingsnių imties pagrindimo procedūra, leidžianti pagrįsti į tyrimą įtrauktų informantų (ekspertų) imtį, atspindint tris absorbcinio gebėjimo dimensijas (žinių prieigą, įsisavinimą ir sklaidą) ir RIS dalyvių įvairovę. Ši kokybinė tyrimo prieiga buvo patikrinta mažos šalies – Lietuvos – atveju, todėl straipsnyje pateikiama ir keletas praktinio šios procedūros taikymo išvalgų.

Tyrimo metu nustatyta, kad kokybinė tyrimo prieiga turi būti pagrįsta RIS samprata, aiškinančia, kad visos RIS institucijos (formalios organizacijos), nors ir yra nepriklausomos, tačiau kartu yra glaudžiai tarpusavyje susijusios, jos visos atsakingos už mažos šalies RIS absorbcinio gebėjimo vystymo procesą ir inovatyvių veiklų rezultatą. Labiausiai šią tarpusavio priklausomybę atspindi „trigubos spiralės“ modelis, kur šalia trijų tradicinių dimensijų – universiteto (akademijos), verslo ir valdžios (Etzkowitz ir Zhou, 2006; Viliūnas, 2006; Etzkowitz, 2007; Balász ir Leydesdorff, 2011; Leydesdorff, 2012; Leydesdorff ir Ivanova, 2016) – atsiranda ir ketvirtasis komponentas – inovacijų ir verslo paramos institucijos (Petraitė, 2009; Juknevičienė, 2015), kaip integruojantis pirmąsias tris dimensijas ir sutelkiantis jas siekti bendrų inovacijų politikos tikslų. Būtent šis modelis tampa kokybinio tyrimo teoriniu pagrindu.

Tyrimo metu suformuota ir straipsnyje pristatyta penkių žingsnių kokybinio tyrimo imties pagrindimo procedūra: metodo identifikavimas; metodo pasirinkimas ir RIS atrankos kriterijų nustatymas; metodo pasirinkimas ir RIS institucijų atrankos kriterijų nustatymas; metodo pasirinkimas ir kriterijų RIS institucijų atstovų (informantų, ekspertų) atrankai atlikti nustatymas; pasirinktos metodologinės prieigos (įgyvendinamumo, patikimumo) patikrinimas, o prireikus – korekcija (grįžimas prie ankstesnių žingsnių). Visa ši procedūra pasižymi linijiniu įgyvendinimo kryptingumu. Tačiau susidūrimas su tam

tikrais iššūkiams tyrimo metu gali keisti tyrimo žingsnių kryptingumą (nuo „judėjimo priekin“ į „judėjimą atgal“).

Pagrindiniai iššūkiai, su kuriais susiduria formuojant Lietuvos RIS absorbcinio gebėjimo raiškos kokybinio tyrimo imtį, susiję su duomenų ir asmenų prieinamumo ribojimais, laiko ribotumais, žmogiškuoju veiksniu (eksperimentų motyvacija ir sutikimas dalyvauti tyrime) ir pan. Susidorojimas su iššūkiams susijęs su reagavimu į galimybes, suponuotas aplinkos ir formalių reikalavimų. Paskutinis iš siūlomų imties pagrindimo žingsnių (penktasis) turėjo būti integruotas į antrą, trečią ir ketvirtą žingsnius, kas pakeitė tyrimo veiksmų kryptingumo tendenciją (linijinį kryptingumą, siūlytą teoriniame kontekste, pakeitė sąveikaujantis kryptingumas, sąlygotas empirinio tyrimo).

Ateityje mažos šalies regioninės inovacijų sistemos absorbcinio gebėjimo raiškos kokybinis tyrimas gali būti atliekamas pritaikius nurodytą penkių žingsnių imties pagrindimo procedūrą arba ją adaptavus pritaikant skirtingas tyrimo tobulinimo priemones: antruoju žingsniu padaryti vieną iš sprendimų – įtraukti daugiau negu du

regionus (mažos šalies kontekste galima ir visus), pasirinkti tik vieną regioną giluminei atvejo analizei atlikti, padaryti panašaus profilio skirtingų šalių regionų lyginamąją analizę; trečiuoju žingsniu – padidinti tyrimą įtrauktų formalių RIS institucijų skaičių, įtraukti ne tik sėkmės, bet ir nesėkmės atvejų (pasirinkti akademinės ir verslo institucijas, patyrusias nesėkmių inovacinėje veikloje); ketvirtojo žingsnio metu įtraukti ne tik universitetų, bet ir kitų regiono mokslo ir tyrimų institucijų, kolegijų, mokymosi institucijų (profesinio rengimo mokyklų, perkvalifikavimo institutų ir pan.) atstovus. Visos šios transformuotos priemonės turėtų tiesioginį poveikį tyrimo veiksmų kryptingumui, tačiau penkių žingsnių regioninės inovacijų sistemos absorbcinio gebėjimo raiškos kokybinio tyrimo imties pagrindimo procedūra gali būti taikoma visais atvejais, todėl ji pasižymi aukštu pritaikomumo lygiu ateities tyrimuose.

Pagrindiniai žodžiai: regioninė inovacijų sistema, absorbcinis gebėjimas, imties parinkimas.