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SMEs innovativeness and institutional support system: the local experiences in qualitative perspective. Polish case study

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Abstract

Research background: Many contemporary empirical studies and most economic growth theories recognize the importance of innovation as one of the most progressive determinants of socio-economic growth, both in the regional and local perspective. However, much of the empirical literature has discussed the issue of innovativeness and institutional environment without the significant results for small enterprises, especially in peripheral regions.

Purpose of the article: The aim of this paper is to evaluate the institutional support system and its impact on SME innovativeness in Podkarpackie region. In analyzing this case, we raise the following two questions: (1) what are the types of innovation strategies of SMEs in Podkarpackie? (2) what are the factors affecting innovation and potential barriers to further use of institutional support systems aimed at the implementation of innovation in enterprises?

Methods: Based on the empirical research, we have analyzed the data (individual in-depth interviews) and found out how the entrepreneurs, R&D, business environment institutions, regional and local authorities assess the use of programs and projects dedicated to innovation in the scope of the institutional support system and what are the barriers encountered by entrepreneurs that limit the implementation of innovation.

Findings & Value added: The results of our research show that institutional support systems mitigate negative consequences of peripheral localization of the enterprises, where specific innovation strategy has no influence on SME assessment of innovation effectiveness. Innovation is too costly, and SMEs are too weak in peripheral regions, therefore there is great need for reasonable and flexible institutional support systems. However, the peripheral situation influences this institutional system itself, strengthening the mechanisms of self-censorship.

Introduction

Innovations are considered one of the main drivers of growth and competitive advantage, especially in the regional perspective, whereas institutional environment is regarded as a key factor supporting innovativeness of enterprises. The question, therefore, arises whether and to what extent innovations and institutional support systems constitute a common element of pro-innovative and pro-growth solutions.

Although Podkarpackie is a less-developed region, some recent studies provide evidence that innovative companies emerge in this region. These successful case studies appeared in the period of the regional innovation policy instruments. The aim of this paper is to evaluate the institutional support system and its impact on SMEs innovativeness in Podkarpackie region. In analyzing this case, we raise the following two questions: (1) what are the types of innovation strategies of SMEs in Podkarpackie; (2) what are the factors affecting innovation and potential barriers to further use of institutional support systems aimed at the implementation of innovation in firms.

In the study qualitative structured individual interviews (*in-depth interviews* — IDIs) with key individuals in SMEs, R&D units, business environment institutions, regional and local authorities were used as a research technique. The goal was to find and reveal possible differences in perspectives of representatives of these four categories that may influence the effectiveness of innovation support systems.

The article is organized as follows. The first section of the paper presents a literature review on institutional support systems related to innovativeness, highlighting correlations and the possibility of their joint examination. The authors also show a brief description of the Podkarpackie region. In the second section the authors present the description of methods and the data used. The third section consists of the presentation and discussion of the results. The paper ends with concluding remarks.

Literature review

The significance of innovation and institutional environment for the effectiveness of the economy and, as a consequence, for economic growth and competitive advantage is stressed in numerous studies (compare Żelazny & Pietrucha, 2017, pp. 43–62; Furková & Chocholatá, 2017, pp. 9–24; Petrarriu *et al.*, 2013, pp. 15–26; Priede & Pereira, 2013, pp. 212–221; Bottazzini & Peri, 2003, pp. 687–710; Sternberg & Arndt, 2001, pp. 364–382). For example, Żelazny & Pietrucha (2017, pp. 43–62) to devise a measurement method for a creative economy, where as a result of feedback between institutions, human capital and technology conditions facilitating the development of creativity are created. Innovations are made in the specified expanse with a system of linkages, which is called an *innovation system*. It contains production and scientific sub-systems, institutional solutions and interdependent relationships among them. The high level of innovation has a positive impact on productivity at the firm level (business performance, see, e.g. Bhaskaran, 2006, pp. 64–80). Consequently, the high level of innovation has a positive impact on the economic results at regional or national level (economic performance, see, e.g. DiPietro & Anoruo, 2006, pp. 33–139). Studies similar to ours were carried out (Silva Cirani *et al.*, 2016, pp. 210–230; Piana *et al.*, 2015, pp. 5–24; Grillitsch & Nilsson, 2015, pp. 299–321; Andersson & Johansson, 2008, pp. 193–224), but there are no significant results for small firms.

Poland is one of the least innovative countries in the European Union (see e.g. Wierzbicka, 2018, 123–139; Żelazny & Pietrucha, 2017, p. 43–62; Kondratiuk-Nierodzińska, 2016, pp. 451–471; Pater & Lewandowska, 2015, pp. 31–51). In line with the EU strategy, the perspectives for further development depend on the ability to raise the level of innovation by institutional incentives in all Member States. The responsibility for creating conditions for innovation-driven growth fell on Regional Authorities — they have responded by forming Regional Innovation Strategies (RIS is the basic tool for shaping the innovation policy at the regional level). This strategy indicates a sequence of actions and tasks necessary to boost the region's innovative development. RIS aims to build an effective system of supporting innovation in the region. It is a tool for supporting regional and local authorities in stimulating the region's innovation capacity. Regional innovation strategies are, consequently, the basis for building efficient regional innovation systems (Plawgo *et al.*, 2013, pp. 83–86). The institutional support system for RIS allowed for implementation of many activities financed from European Funds (in the financial perspective 2007–

2013). Regional Innovation Systems became a crucial element in maintaining international competitiveness of regions.

An institutional support system for innovation, through selected tools, is aimed at strengthening innovative potential of strategic sectors. In other words, it is to create an ‘assemblage’ that consist of a multitude of institutions working together to create environment strengthening innovation processes (Lawton & Smith 2003). RIS in the Podkarpackie (in 2005–2013) functioned as a policy tool that local policymakers used to create knowledge-based growth in the region. RIS was created as a response to contemporary trends to support innovation and competitiveness in the EU. On the national level national level, the program ‘Strategy for increasing the innovativeness of the economy for 2007–2013’, as well as innovation strategies in Polish provinces led to the increasing of competitiveness on the national and regional levels. The system helps allocate funds properly by building a network between businesses and universities. The funds were launched to facilitate the transfer of knowledge — one of the key points identified during the assessment.

Most of the studies on Regional Innovation Systems refer to the ideal types or typologies or they are focusing on the barriers of innovative growth. The pioneering research on that field conducted by Doloreux and Dionne (2008, pp. 259–283) concludes that further research would fill the gap in knowledge about effective institutional support systems that promote innovativeness. There are also other research results that stress the need for policy improvements that might be adopted by peripheral regions (e.g. Żelazny & Pietrucha, 2017, p. 43–62; Woźniak *et al.*, 2015, p. 129; Rodríguez-Pose *et al.*, 2014, pp. 1–20). We think that the knowledge base on the institutional support system of innovation on the regional level is still overflowing with unanswered questions. Our research provides empirical findings about institutional support systems that improve innovativeness of firms.

RIS was important from the policy perspective, because Podkarpackie Voivodship is a region of low-level economic development. Podkarpackie’s efficiency-driven manufacturing industry was considered to be dormant, however in terms of innovation it ranked quite high — 65th place in the RIS 2016, which surveyed 214 European regions. When it comes to innovativeness, Podkarpackie region is a Moderate Innovator. Innovation performance has increased (+3%) compared to two years ago (Regional Innovation Scoreboard 2016, Annex 4: Regional profiles. Regionals profiles Poland, p. 6¹).

¹ Profiles for all regions included in the RIS 2016 are available on the European Innova-

The relative strengths compared to the EU28 are in Non-R&D innovation expenditures, Tertiary education attainment, and Exports of medium and high tech products. The relative strengths in the regional innovation system are Exports of medium and high tech products, Tertiary education attainment, and Non-R&D innovation expenditures. Relative weaknesses are in SMEs with marketing or organisational innovations, Public R&D expenditures, and EPO patent applications. The question is how institutional support systems impact the improving innovativeness of firms.

Research methodology

The article is based on analysis of 16 structured individual in-depth interviews (IDIs) conducted with the representatives of: innovative SMEs (4 interviews), business environment institutions (BEI — 5 interviews), research and development entities (R&D — 5 interviews) and local government (LG — 2 interviews). The interviews were financed in 2014 within the research project titled “The Study of the Impact of Investments in Innovation on the Competitiveness of the SME sector in Podkarpackie Voivodship”.

The structured individual in-depth interview is a research technique focusing on individual perspective, allowing each respondent to answer the questions with their own words (Denzin & Lincoln, 2005; Rapley, 2010; Flick, 2010). This interview is structured because there is a list of questions that must be asked in predefined order and the moderator has only the right to ask additional questions when needed, or to skip some questions if fully answered already (such instructions were implemented in this particular case). The term “individual” means that the whole interview should be conducted face-to-face by a moderator with one respondent at a time, without any third parties whose presence might bias the answers. Finally, in-depth stands for the assumption that the possibility exists for the respondent to use their own argumentation which allows us to look deeper into argumentation structures: spontaneously used terms, connections and argumentations reveal a respondent’s perspective (not adjusted to predefined answers in a cafeteria standardized quantitative questionnaire).

In other words, a structured individual in-depth interview as a technique of qualitative methods concentrates on understanding the phenomenon from the respondent’s point of view — analyzing specific and unique per-

spectives and not presenting the scale or probability of the phenomenon (Znaniński, 2008).

The questionnaire of structured individual in-depth interviews was exactly the same for each category of the respondents. They all, regardless of category represented, answered a list of the same questions. This allows us to compare answers not only within each category but — what is more important in the context of evaluation — between the categories. The goal is to find and reveal possible differences in perspective that may influence the effectiveness of innovation support systems.

It must be fully stressed that each of the entities was well recognized by earlier research within monitoring and evaluation of Regional Innovation Strategy for Podkarpackie Voivodship (a series of reports under one title: “*Studia nad innowacyjnością woj. podkarpackiego*” (Lewandowska *et al.*, 2011–2014)). In other words, “innovative SME” means an enterprise occupying a top position in the rankings of innovation which have introduced at least one product innovation or process innovation (Oslo Manual, 2005, pp. 48–49) (rewarded for innovation on at least regional level, e.g. laureates of “*Innowator Podkarpacia*”, the competition organized by Rzeszów Regional Development Agency, the Centre for Technology Transfer, Innovation and Information Technology in Rzeszów and Rzeszów University of Technology). “Business environment institutions” also stands for those institutions that had been particularly active in the region and these were the best known, too. Thanks to the monitoring and evaluation of RIS, we also knew of regional R&D (those created by regional universities, as well as independent entities active in innovation). Finally, representatives of two local authorities were invited to participate in the study because of their above-average activity in the area of innovation support.

Each interview listened to twice and then the fragments of statements regarding the six areas (understanding of innovation, benefits of innovation, costs of innovation, barriers to innovation, cooperation in innovation and problems of cooperation with environment) were independently transcribed. In the second step of analysis, the transcriptions were transferred into Atlas.ti software, and once again independently, coded. All codes had been discussed and double-checked with citations and then nodes and links were created (the matrix, along with the models, is available from the authors).

Thanks to this approach, we were able to recreate argumentation strategies for three main groups of actors on the regional level of innovation with particular emphasis on small and medium enterprises and their perspective. Finally, the models were presented to selected study participants and once

again discussed as to whether they present actual perceptions of institutional support systems of SMEs innovativeness.

The analyses are of a qualitative character — they rather show specific perspectives and ways of thinking/argumentation resulting from subjective perception of the problem. In this meaning, the results are not representative in any aspect. We concentrate on better understanding of the phenomenon, trying to present the different perspectives of the main process participants. In our opinion, we show major differences in perceiving innovativeness of small and medium enterprises that reveal fundamental problems in supporting innovation in peripheral regions.

Results and discussion

Innovation strategy in SMEs perspective

The whole argumentation model of SMEs is presented in Figure 1, however the very core of SME perspective is the dyad of “profit” and “costs”. Of course, the interviewed representatives of innovative SMEs stated that innovation, especially understood as “a breakthrough”, is their “niche” of business. However, they also stressed that “long-term potential profit” and “need for profit” are also crucial barriers to breakthrough innovations, because of the costs: the need for “internal resources and capabilities” (understood as own design departments or own laboratories etc.) and “costs of implementation” (such as calculating market prices, clients’ interest, building production lines, etc.). One must remember that the small and medium enterprises’ perspective shows a crucial internal contradiction: on one hand innovativeness is the main source of income, but at the same time it needs great amounts of expenditures that could lead to the risk of bankruptcy due to long-term and potential profit from the innovation.

This contradiction has been solved by introducing one more party to the whole model: the client. Our interviewees stressed that they concentrate on the clients as “source of innovation” — becoming contractors of someone else’s ideas. Such a solution allows them to use (and finance) “internal resources and capabilities” and transfer the “risk of potential failure” along with “costs of implementation” to the client. For small and medium enterprises, it means in practice that they do not pay for the risk and they can sustain the “resignation flexibility” (meaning the resignation when the innovation is impossible to turn into profitable activity). In our opinion, this stage of argumentation is best presented by this particular statement of one of the respondents:

It used to be that dudes (construction department) had great ideas that ended up in a drawer. You could feel the atmosphere of, let's say, some creativity, pursuing ideas, only the numbers, the numbers simply decide whether something is successful or not, and not some satisfaction from something we did, that it worked. Today maybe they are not such abstract ideas, but created with the customer [SME_2, code: barriers to innovation — need for profit; translation from Polish].

The pragmatism of small and medium enterprises' representatives goes much further beyond the relation with the clients. Innovation is perceived as a “long-term process” where the mentioned “flexibility in resignation”, especially when the planned innovation is impossible to introduce to practice after two-five years of expensive research, is the only mechanism to prevent major loss that could threaten the existence of the SME. This pragmatism leads to skepticism about the strict formalities of public financial support such as the EU funds on innovativeness. In SME perspective, the formal frames of programs to support innovation, especially the order to implement innovations in declared terms, is the source of problems.

In practice, it results in conscious resignation from public financial support and financing the innovation from own sources and along with the client. Therefore, when speaking of “cooperation in innovation”, SME representatives concentrated on “no external financial support”. Additionally, the regional system of innovation support was perceived by representatives of small and medium enterprises as not fully transparent and equal to all participants (“unreliable external financial support”):

Someone might be better in arranging — in Poland you just simply arrange, it's not a normal state. If it were a normal state, yes, why not, but it's not: it's the state where you arrange, where you contrive — oh, this one is out because they didn't put a period here. This is the destruction of the idea, competitiveness and so on. I know firms that put in millions of applications and now they contrive how to mix the cash, to sell it. (...) They contrived it by their deals, but now they don't know what to do with it, because they wrote stupid projects that are unfulfillable, but they've got the cash, because they got it and now they contrive how to convert it, to use it anyway [SME_3, code: cooperation in innovation — unreliable external financial support; translation from Polish].

The conviction of unreliable conditions might be the consequence of very strict formal requirements that often apply only to editing aspects of the application.

There is also another consequence of close relation with the client — the innovation must be developed in strictly certified conditions if it is to be implemented in practice. During the interviews our respondents regularly

emphasized that they were interested in cooperation with research and development entities or laboratories “based on competence and quality”. That meant that SMEs are able to search for proper partners far out of the region borders, regardless of the current regional financial support program.

In our opinion, this combination of arguments explains the relatively small amount of external financial support in development of innovations in small and medium enterprises in Podkarpackie region (Lewandowska & Stopa, 2016, pp. 8–15; Lewandowska *et al.*, 2014, pp. 785–797).

Innovation strategy in R&D perspective

Out of five interviewed R&D entities, four are strictly connected with local universities (two with University of Rzeszow and two with Rzeszow University of Technology). The fifth one is a public research institute located in Podkarpackie region. Nevertheless, they all were quite similar in argumentation construction when speaking of innovation strategy, which is presented in Figure 2.

In general, research and development units present a wider perspective of innovation than in the case of SMEs. For the latter, innovation was a source of profit, a niche of business activity. R&D respondents perceive “innovation as development mechanism”, both in the economic and social capital meaning. What we find really interesting is the fact that the representatives of R&D think about innovation on two separate, but still complementary levels.

The first level is more pragmatic — it is the level of cooperation with enterprises. Within this cooperation research and development units often play the role of subcontractor or sometimes the role of a partner for firms. In this meaning, R&D support for local and regional enterprises ensures their better competitiveness and therefore is a development mechanism (in opinions of the representatives).

The second level of understanding the innovation is more ideological, where cooperation in innovation with enterprises, based on the newest technologies, allows them to educate in practice future human resources that will trigger further innovativeness. What is worth emphasizing in this argumentation is that the educational role is described only within practical cooperation with firms.

In other words, “internal resources and capabilities” of R&D are seen by them as tools for technological, economic and social development of the region. One of the respondents included all these aspects in just one answer we would like to cite in this place:

It will be a very big development of academic staff, faculty, students, based on the high technology. This is one of the most important effects. Students, who a few years ago were coming out of our universities, not only our university, but in general the Polish universities, and they went to the modern firms, they were terrified by new [solutions]. Now, this gap will be gone, because they study as in Western universities, work on the best hardware. (...) When going to the factory they won't be surprised by a microscope or a dosimeter, finally, I don't know, a spectrometer, that would be something amazing in comparison to what they know from their studies. So, this is a very big thing — it's a really big thing. I suspect that our students in many smaller companies will be the drivers of what hardware should they work on. (...) It's already very close to that step when innovation appears in companies [R&D_1, code: innovation as development mechanism; translation from Polish].

In that perspective, there can be only barriers and obstacles in fulfilling their defined mission. These exist as the interviewed representatives pointed out such barriers as both internal and external. However, none of them criticized their “internal resources and capabilities” themselves.

Among internal barriers to innovation the representatives of R&D mentioned costs of the research. That is why they do need cooperation with enterprises, “with any interested” that can finance the usage of R&D “internal resources and capabilities”. In other words, the costs of innovation are “transferred to the client”. Such cooperation is perceived as a “long-term process” — R&D entities usually have long-term cooperation agreements with their business partners. Of course, the partners must be able to afford expensive research projects, therefore there is a “lack of entities” in the region that can cooperate with R&D, and there is “competitiveness” in cooperation with enterprises among R&D.

But, because of the fact that R&D units are part of larger organisms (universities), such cooperation is blocked by “internal legal frames” or bureaucracy in practice. However, it is not the greatest problem of cooperation with private partners. Universities' research and development units have been financed from public sources such as the EU funds, and therefore there is a five-year term of non-commercial usage of hardware and software. In our opinion it is the most crucial internal contradiction in argumentation presented by the R&D representatives: without public financial support they would be unable to build their resources and laboratories, but because of that public financial support they are unable to use it commercially for at least five years.

In practice, R&D must swerve back and forth trying to build partnerships with enterprises that fulfill complex and rigorous frames of publicly

financed projects, overcoming the internal inertia of their own bureaucracy structures at the same time:

As for this project, we can't speak in the sense of the joint research, so, as I say — these are 100% funding for education, which are dedicated to the sector, but due to the participation of public funds, there is no possibility of financing industry. And here you have to realize clearly that the rules of the game are difficult here. We want to do for them [industry], and we do, but all the time, to maintain the eligibility of costs, you have to be very careful with the way of spending, with the goal of the level of generality, etc. Well, but that is the nature of all such projects and the spending of the EU funds [R&D_4, code: barriers to cooperation in innovation — formalities; translation from Polish].

It is worth adding that the opinion of public R&D representatives on publicly financed projects is quite similar to those formulated by representatives of SMEs — external financial support is “unreliable” in matters of transparency and equality of participating units and that competing with public universities and their research and development units is quite difficult.

Innovation strategy in BEI perspective

In the case of business environment institutions, the argumentation is not that consistent as in the two earlier perspectives. Actually, it is possible to identify two main strategies that lead to two contradictory actions (see Figure 3). The starting point of both of them is the assumption that the main domain of BEI activity is “entrepreneurship support”. For some of the researched entities it is literally understood as the destination point, meaning in practice that they “lack the competences in innovation”, and because of this “barrier” they have “no cooperation in innovation” at all. As one of the respondents described it quite vividly:

Our area of activity is why we don't have much in common with this innovation, you know, ambitiously understood. However, frequently the entrepreneur, enterprise wants to do something, and touches the problem of innovativeness (...) but we are a poor partner. We direct to others [BEI_3, code: barriers to cooperation in innovation — lack of competences; translation from Polish].

Interestingly, by “others” the respondents of this type meant research and development units in the region.

In the opposite situation, “main domain as entrepreneurship support” means the starting point in building new cooperation, as “response to the needs” of innovative enterprises. The main goal of such a strategy is to “facilitate” the innovation process by “consulting” (due to “unreliable external financial support”), but mainly by offering “sophisticated services”:

We don't have ambition — it would be wrongly directed ambition — that we are well up in innovation, that we know what firms should do. (...) We are for, when people want to do something, they do something, produce, manufacture, for helping them to do it faster, easier, simpler, to enter the process, ask them what may help [BEI_4, code: cooperation in innovation — sophisticated services; translation from Polish].

This is the main reason why these type of respondents, representing BEI, have invested in laboratories, 3D printers, measuring machines or machining centers as equipment of their business incubators. They perceive themselves as support entities for enterprises that are already innovative.

Local authorities (LA) are of another category but still may be defined as institutions of the widely understood business environment institutions. They do not fit into the model presented above. We researched local not regional authorities (the last ones are responsible for the Regional Innovation Strategy and therefore have proper, at least formal, tools to create and steer innovativeness on the regional level). Local authorities may encourage specific economic activity by offering only developed investment areas or local tax relief. The two interviewed in the project actually have been doing this but to encourage entrepreneurship generally rather than innovativeness itself. Such scope of the activity results directly from the legal competences of local authorities in Poland. That is why we suppose that the offer addressed to innovative entities has been created by the way of creating a more general offer.

Conclusions

The main goal of the article is to present perspectives of the main parties of the innovation process in peripheral regions to identify obstacles in creating more consistent and efficient solutions that can be applied in every-day policymaking. None of the interviewed entities were accidentally chosen for the study: all of them have been active in widely understood innovativeness above the average in Podkarpackie region: by being innovation leaders (SME), by cooperating in innovation (R&D) or by supporting and financing innovation (BEI and LA). All of the interviewed entities had been

well recognized within earlier research on monitoring and evaluating Regional Innovation Strategy in Podkarpackie Voivodship. In other words, the representatives of these entities have the most comprehensive knowledge on innovation strategies within their own areas of activity.

The analysis of in-depth interviews with SMEs that are innovation leaders in the region shows that innovativeness is the natural niche of their business activity. Thus, from SMEs' perspective the costs of innovation and potential profit from innovation are crucial reference points for evaluation of any new ideas. In other words, relying on their own capabilities is too risky and therefore the participating innovation leaders try to transfer the risks to clients who become one of the important parties of the innovation process (parties that are often external to the region). It allows them to disperse potential threats and, at the same time, gain additional financing for innovation. What is really interesting is the fact that the same criteria of risk are used to evaluate public financial support — rigid formal frameworks of the EU projects are perceived in categories of possible threats to SMEs' existence (in the case of possible unsuccessful projects financed from public sources).

Research and development units are concentrated on cooperation with enterprises, but we suppose that in the name of a wider perspective of educational mission. This cooperation is a kind of alibi to gain additional public financing to buy sophisticated new equipment or software. However, this alibi has some internal weaknesses, because publicly financed equipment/software have their durability of operations — which means in practice that they cannot be used commercially usually for up to five years. In other words, R&D units are able to improve their cooperation possibilities thanks to public financing within e.g. the EU projects, and in consequence they can improve education standards preparing future human resources, but because of rigid formal frameworks of the same EU projects, they are unable to cooperate with enterprises to the full extent on commercial conditions, at least not in the mentioned period of durability of operations.

Business environment institutions active in Podkarpackie region are of two general kinds. Some of them are concentrated on supporting entrepreneurship itself, considering the region as peripheral and weak where basic actions are still needed. Innovativeness is not in the center of their interest as seen being too complex and beyond their competences. In this type, we place local authorities that do not have legal competences to support and stimulate innovativeness: they do not manage universities localized in their borders (therefore R&D as well) and they can actually offer only developed investment areas or local tax reliefs for enterprises generally. Other BEI try to support innovativeness, but these SMEs that are already innovative: lis-

tening to their needs and preparing technical amenities that can effectively improve innovative actions themselves (e.g. within business incubators managed by them).

In our opinion, the general conclusion emerging from analysis of these in-depth interviews leads to the assumption that there is no subject responsible for innovation in the region and the innovation policy is dispersed by particular perspectives of the most active entities. We are fully aware that the research is of a qualitative character and gives no foundations for any kind of generalizations, however it allows us to present the asymmetry of rationality in action (Staniszki, 2003). In peripheral regions such as Podkarpackie innovativeness is rather pointedly introduced than is a result of an internal consistent regional culture of innovativeness.

There is a need for further research to estimate the net effects of SME innovation based on the analysis of counterfactual states. This would mean to look at the regional impact of different measures of SME innovation and perform counterfactual analysis with a combination of the propensity score matching (PSM) method, evaluation of the SME's innovation strategies differences and analysing the impact of SME's innovation on strategy effectiveness. The latter approach would be very useful for illustrating the added value of SME innovation compared to the situation in the absence of innovative activities.

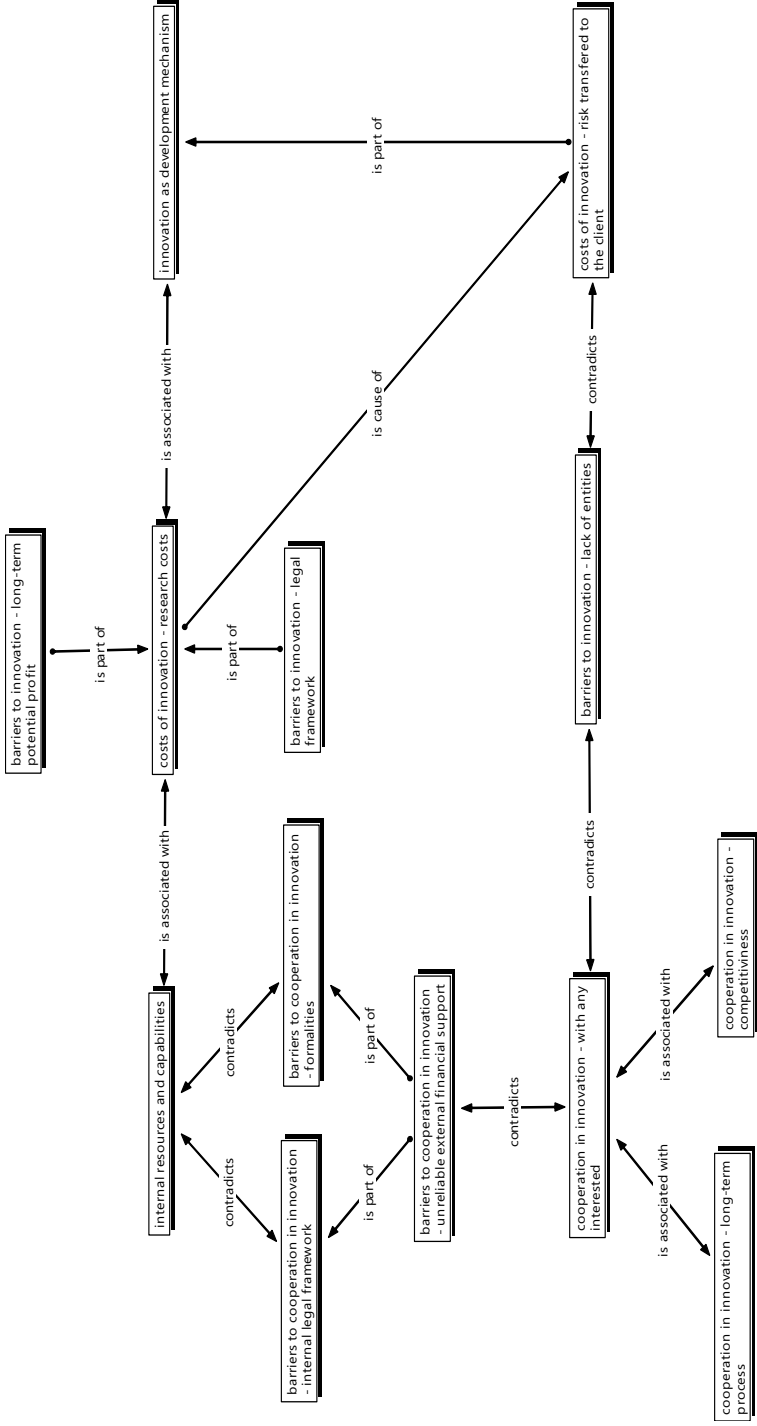
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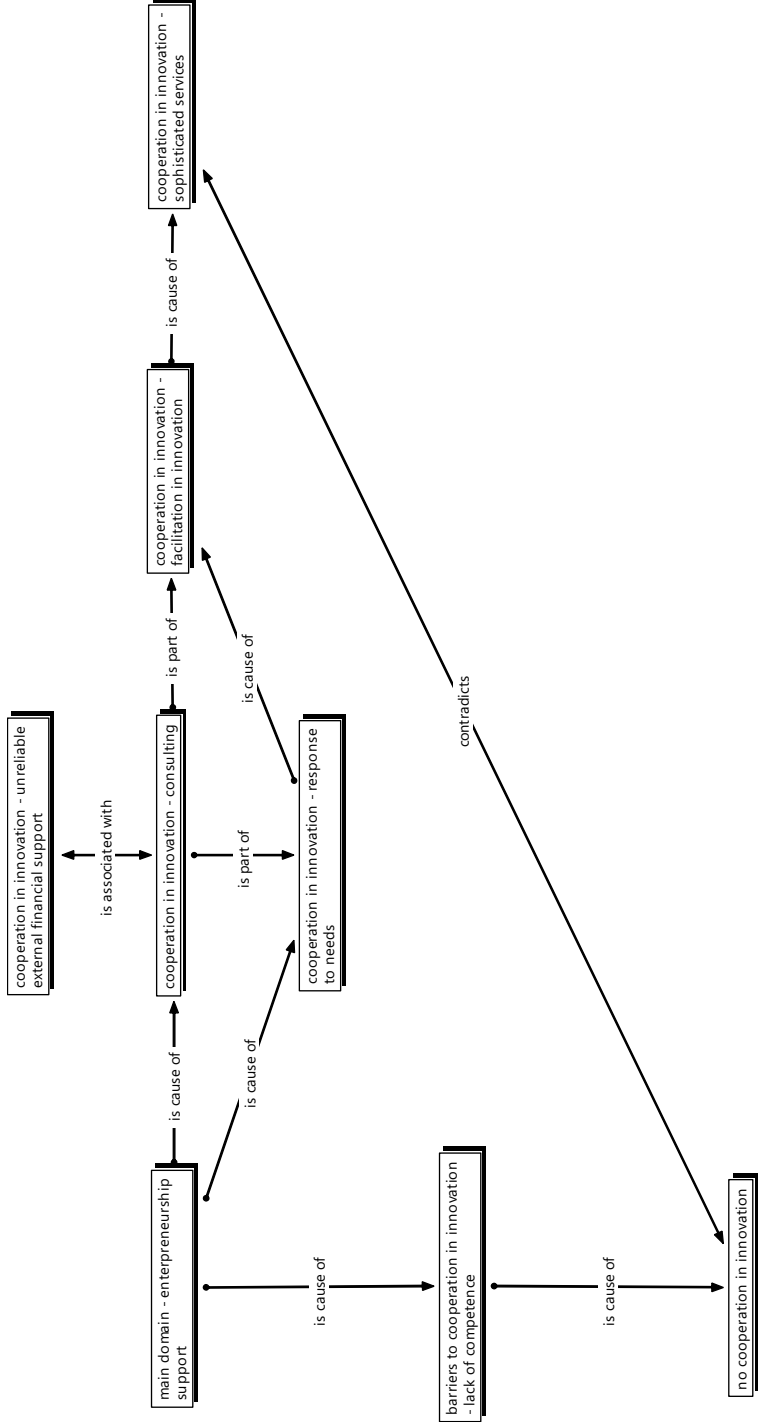
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Figure 2. Model of argumentation in R&D strategies for innovation



Source: own research based on analysis of structured individual in-depth interviews (IDI).

Figure 3. Model of argumentation in BEI strategies for innovation



Source: own research based on analysis of structured individual in-depth interviews (IDI).