INNOVATION CONDITIONS OF ENTERPRISES IN SLOVAKIA AND ITS STATE AND REGIONAL PUBLIC SUPPORT

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Abstract

According to the OECD, innovation is thriving in a skilled workforce, in an environment that is adaptable to technological and structural changes, in an entrepreneurial environment conducive to investing in knowledge-based capital, in an environment of strong and efficient knowledge creation and diffusion, with policy support (pro-innovation, entrepreneurship), which is mostly the sphere of public sector activity. In our contribution, we are discussing innovation as a public good and the need for public support of innovation. We summarize the views of economic theory on the need to support innovation (based on theories of market failures, institutional failures and system failures). We evaluate strategies for supporting innovation activities of enterprises from state and regions and their instruments. In analytical part we present the results of the survey on innovating activities of Slovak enterprises and on conditions for their implementation. Finally, we will try to suggest possible ways to improve the current state and forms of public support of enterprise innovating activities.

Key words: innovation conditions, enterprise innovations, state and regional support of innovation

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Introduction

Innovation has become the important sources of enhancement competitiveness of firms, regions and country (see Fritsch & Franke, 2004). In particular, the ability of innovation to stimulate competiveness is particularly salient in knowledge spill-overs theory and endogenous growth theory. The significant rank of innovation for economic growth is also noticeable in the European Union strategy Europe 2020, especially in creation the conditions for a more competitive economy (Zygmunt, 2018).

In scientific literature there is distinguished between R&D and non-R&D innovation. Considering R&D expenditure in the public sector, there is a widespread agreement that such expenditure creates condition for networking research organisations, institutional environment, universities and firms (see, e.g., David et al., 2000). Hence, R&D expenditure in the public sector is treated as "strategic tool to improve the competitiveness of countries" (Hammadou, 2014, p. 1217).

Regarding non-R&D innovation expenditures, a number of theoretical and empirical studies highlights their importance in stimulation innovation (see, e.g., Lopez-Rodriguez & Martínez, 2017). Thus, minor modification of products or processes, or investment in equipment and machinery might impact on firms' productivity and, in consequences, on growth of firms, regions, and country. Government is one of the determinants for innovation capacity according to the National Innovation System theory (Nelson, 1993) and the Triple Helix theory (Etzkowitz and Leydesdorff, 2000; Wang, 2018).

1 Innovation as a public good

Innovation is based on knowledge. In economic terms, knowledge is a 'non-rival' good – meaning that many people can consume it at the same time. Knowledge is also 'non-excludable' – it is hard to stop people getting access to it. Non-excludable, non-rival goods are 'public goods'. In economic theory, the results of basic research are such public goods. In theory the market cannot produce these, so since society needs or benefits from them the state must pay.

The idea of 'market failure' leading to under-investment in research has been the principal rationale for state funding of R&D in the post-War period. Arrow described the three major sources of market failure which – from a neo-classical perspective – make it useful for government to fund research:

• invisibility, because of the existence of minimum efficient scale. This applies to knowledge as much as it does to investments more widely.

• inappropriability of the profit stream from research, leading to a divergence between public and private returns on investment. This results from two essential (and economically efficient) freedoms that researchers have: namely to publish and to change jobs

• uncertainty, namely divergences in the riskiness of research respectively for private and public actors

The recognition that there are varying degrees of market failure in different types of research and innovation related activity underpins the fact that there is a 'slope' in the degree to which governments subsidies them. Thus, basic research in universities is fully funded while work intended to lead more directly to industrial application is typically funded privately or may be cost-shared between the state and industry where risks and potential spill-overs are high. The treatment of R&D costs by the state is also affected by the fact that these are mostly 'sunk costs', namely costs that do not necessarily produce re-usable values.

Tab. 1: Failures supporting hypothesis about innovations public support need

Barrier	Key features	Failure
Character of science and technology	The size of scientific or technological problems is too great for individual private actors to tackle if markets are competitive, and may be accompanied by uncertainty, making it hard for the private sector to invest. It may be that innovation only yields return in the long run, hampering investment.	invisibility, technological complexity, uncertainty
Market power	This can lead to, or be caused by, market power (for example, through the first supplier or user building insurmountable advantage) and may lead to consumer lock-in. High cost of market entry/exit.	market power, economies of scale and scope, dynamic market failure, adoption externalities
Externalities	It is too hard to appropriate enough of the results of research or innovation to make private investment worthwhile. Innovation may depend upon the presence of external networks, which are beyond the means of innovators to create.	Externalities, spillovers (horizontal, vertical, international), inappropriability, network externalities, information externalities
Information asymmetry	High levels of specialized technical and/or market knowledge mean that not all the economic actors involve have the basis for making informed decisions	information asymmetry, imperfect information, incomplete information
Capabilities	These failures result from the difference between the capabilities of real firms and those assumed in the idealized economic model, so that firms lack needed skills resources, ability to learn, absorptive and analytic capacity otherwise to capture innovation opportunities	capability failures, learning failures
Network	Networks are fragmented and /or broad; communication and cooperation within networks are poor. Networks may be locked in to technological regimes, markets or products by their history and capabilities and find themselves unable to transition into new technologies or businesses	network failures, interaction failures, transition failures, lock-in/path dependency failures, lack of weak ties
Institutional	Institutions (whether in the sense of "organizations" or "rules and conventions") operate in ways that impede innovation. Rules and regulation are not conductive to innovation and technological development. Government policy has the same effect	institutional deficiencies / failures (hard and soft), coordination failures, government failures, failure to standardize
Infrastructural	Insufficient human and capital investment in infrastructures critical to innovation performance by the state	missing aspects of physical infrastructure or state provision (e. g. education)

Source: Arnold, Farla, Kolarz, Potau, 2014

There exist many studies about market and system failures, which support hypothesis about need of public support of innovations. Arnold, E. – Farla, K. et al. (2014) in their study have identified the occurrence of market and innovation system failures across a number of technologies and business areas. Their literature review differentiates among eight types of failure: characters of market failures have: specifics of science and technology, market power, externalities and information asymmetry. Characters of systems failure have: capacity failure, network failure, institutional failure and infrastructural failure (see the table above for a more detailed explanation).

Dujava (2013) sees innovation from the perspective of endogenous theories of economic growth. Answering the question of why innovation activity in free markets is lower than it would be socially optimal means explaining why the private value of innovation is lower than its social value. Obviously, the private value of innovation lies in increasing the innovator's profit. On the market, enterprises innovate until the cost of innovation is lower than expected gains they make. When innovation activity reaches a point where innovation costs are just equal to the expected gains in profits, enterprises lose their incentive to innovate.

2 Public support of innovation - systems of innovation support, actors, tools

From a geographical or spatial point of view, it is necessary to differentiate between different levels of public policy (regions, district, municipalities, natural microregions, local functional units), which require a certain type of innovation policy and innovation, either explicitly speaking about innovation policy, or about other types of public policies with elements of innovation support at that public level.

The difference between the national level of support and the regional level lies in the nature of the tools for promoting regional innovation. At the national level, these are legislative and macroeconomic instruments, at regional level should be taken into account the uniqueness of the institutional environment and the significant impact of interconnections and cooperation between the various regional actors. Support instruments should also be adapted to this (Balog, 2013; Rehak et al., 2010; Šipikal et al., 2013; Šipikal et al. 2017).

However, in particular at the regional level, a systemic approach to fostering innovation is required: from setting up an innovation support strategy - which should be the result of discussions and consensus among a wide range of regional actors and stakeholders - and its priority areas (see regional and local strategical documentation for example: economic

and social development programs, regional innovation strategies), through the formulation of public policies to foster innovation, specify measures of these policies to implement them in practice.

At the regional level, it is also possible to support entrepreneurs, but also innovations and reforms in the area of public services, services for the private sector, both profitable and non-profit. A specific example of public sector innovation support may also be information, promotion, counselling, training for potential innovators, and the second group of innovations directly in the public service system are product or organizational innovation (public management and governance, strategic planning, removing administrative burdens).

Because of the growing importance of Cook's regional innovation systems (2004), the implementation of innovation policy is increasingly being implemented at regional level. The regional level is key in the case of innovative support because of its geographical proximity as a prerequisite for mutual cooperation and thus more effective support. Among other things, the specificities of individual states in the area of centralization and / or decentralization should be considered in this case of innovative or other policies.

The innovation policy of developed countries has evolved. Innovation policy of first generation is based on a linear concept of innovation (research - development - innovation) without coordinated support measures. Often this type of innovation policy is part of or an extension of research and development policy. The second generation of innovation policy has the character of systemic and comprehensive innovation support. Research and development is not one source of innovation, this type of policy also places emphasis on other areas of innovation. Innovation policy is horizontal (cross-cutting) with the need for coordination with policies (research, education, industry). Third-generation of innovation policy is not only to deepen and coordinate other policies to support innovation, but to regard innovation as a central / cross-cutting role in all policies.

One of the youngest approaches to regional development that emerged in the 1990s is the concept of regional innovation systems, building on a slightly older national innovation concept (Nelson, 1993). The basis for the concept of regional innovation systems is to perceive an innovation process not as an isolated process that takes place in a single company, but an innovative process that takes place in a particular environment, formed by entities, their interrelationships. The activities of these regional actors are directly linked to the place, social values and the political culture of the geographically localized area.

It is necessary to talk about the multifactorial and innovative potential of the regions. It is also possible to speak of endogenous potential, where the resulting interaction of the aforementioned factors also depends on the inner environment of the region, conditioned inter alia by the effect of effective mutual relations in the region, by atmosphere, ethics of work, self-confidence.

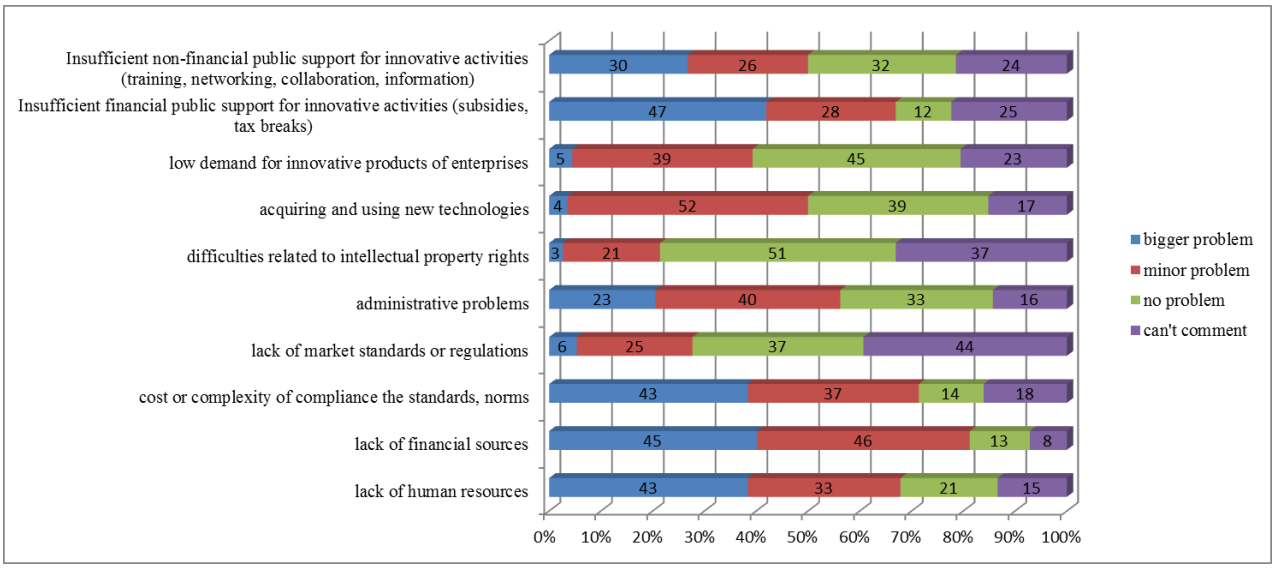
3 Information from the survey of the needs of innovating enterprises in the Slovak Republic and their critical evaluation

The research about innovation conditions for Slovak entrepreneurs was realized on a sample of 112 respondents. It is an unrepresentative sample, represented mostly by small and medium-sized enterprises (enterprises with more than 249 employees represent 13% of our respondents). Almost a third of respondents are active in the industrial sector. Behind them, with a 15% share of the total number of respondents, are followed by wholesale and retail businesses. More than half of respondents (55%) were founded before 1 January 2010. 24% of respondents started their business between 1 January 2010 and 1 January 2015. The remaining 21% were established after 1 January 2015. 72% from respondents introduced any type of innovation. The remaining 28% did not innovate (26%) or could not comment (2%).

Between individual barriers to innovation activity (both inside and outside the enterprise), which were identified as a serious problem by the largest group of respondents, have dominated: insufficient public financial support, lack of funding, insufficient human capacity (respondents reported lack of educated people, with the necessary skills to work in the company (some companies also criticized the employees' reluctance, loss of work motivation), administrative conditions. These are the spheres of the public sector that have been identified by entrepreneurs as the most critical for their innovative business. On the other hand, inadequate public financial support is not a problem for 10% of respondents, almost 12% do not have a problem with funds and legislative or administrative burdens.

The chart below shows the different factors of the external and internal environment, which are important for the innovation activity of companies, according to the degree of importance for respondents.

Fig. 1: Perception of the severity of barriers to innovation activities (% of responses)

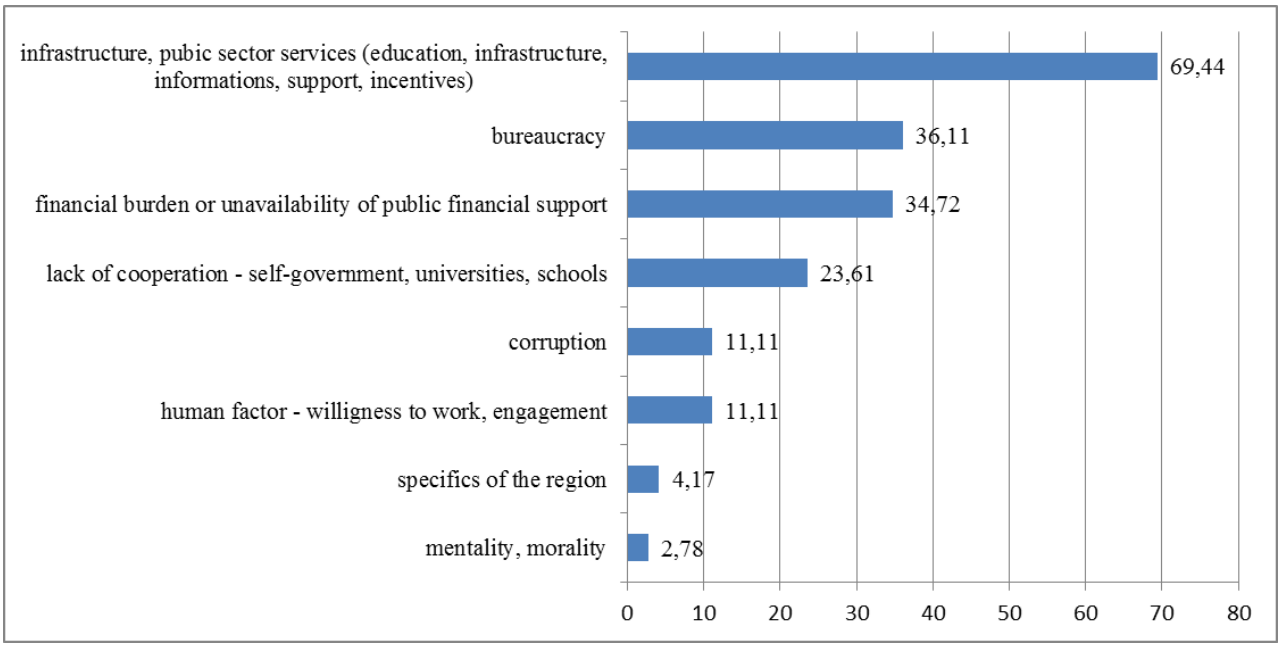


Source: own elaboration based on the results of our own survey

In an open question were respondents asked to specify the problems, the obstacles to their innovation activity, and on the other hand they talked about specific forms of assistance and needs that would support their activity. We categorized their responses into the following areas of influence: public sphere (technical and social infrastructure, education, information, support, incentives), bureaucracy (administration), finance (especially public support), cooperation, legislative environment (its cleanliness, stability) and legal protection vs. corruption, labour force, regional/spatial specifics and their impact on business and innovation, and not least there are areas of: culture, values, attitudes, mentality.

The public sector (almost 70% of respondents) was clearly the most discussed as an external factor with an impact on the innovation and business environment, followed by problems of the state administration institutions and financial problems. See in figure below more details.

Fig. 2: The most important issues in implementing the company's innovation activities from the respondents "point of view" (in respondents, respondents could choose more than one issue)



Source: own elaboration based on the results of our own survey

Conclusion

The innovation activity of the company itself, especially in the case of SMEs in Slovakia, is practically neither financially nor capacity-related (or only to a limited extent). It is necessary an innovative collaboration within sectors, cross-sectoral cooperation, collaboration with the public sector (research and education institutions), as well as collaboration between actors across the region (especially in the case of SMEs). Collaboration can take a variety of forms: through networking, information sharing, experience, mutual learning, learning, clustering, spin-offs. The collaboration of enterprises and universities works for several larger enterprises. SMEs cooperate with these institutions less common. The reason may be a "communication barrier" for SMEs towards education and research institutions.

Due to its mission and functions in the region, the public sector has the potential to participate mainly in providing information, consulting, networking, linking, promoting business cooperation, providing support services. In some cases, it may act as its initiator (preparation of strategic development documents of the region or of municipality), in other cooperation projects public sector may act as one of the regional actors.

We consider functional regional innovation systems (RIS) as the most appropriate and effective way to support innovation at the regional level - as systems of interaction and mutual functioning of different actors with different functions in the region, with a common goal - interest in the sustainable development of the region and its individual components: businesses, citizen, public institutions. Within a functional regional innovation system, individual actors operate on the basis of mutual interaction in the form of: communication, collaboration, information sharing and learning. It is therefore not a one-way activity - from municipalities to businesses. Businesses cannot wait passively for outside assistance without participating actively - for example through active participation in RIS systems - on regional development, strategy and implementation. Instead of "waiting for passive help", enterprises should actively participate in the regional development, including innovative development, actively communicate their needs and actively seek resources to implement them.

Enterprises in the questionnaire survey criticize the complete absence of information, lack of sources for innovation funding or bureaucracy in contact with the public authorities. However, based on our knowledge, informations are available (private or public agencies with information and consulting services). However, SMEs are not interested in the services of these advisory and project offices (mainly due to financial costs or personnel capacity utilization in SMEs).

Our questions about motivation to innovate showed that companies innovate under pressure from the outside (from competitors, customers). The innovation activities of companies lack the "innovation awareness" of the companies themselves awareness of the importance of innovation for the everyday existence and sustainable development of the company.

Based on respondents' answers, we have to say that entrepreneurs are passive, either waiting for support from outside, if it don't come, they don't innovate. At the same time, innovation is the driving force behind the development of any industry. The questionnaire answers showed that companies predominantly do not have a systemic approach to the innovation process (including financial and staff background).

Finally, it should be emphasized that the innovation activity of enterprises is primarily an initiative of the company (innovations ensure the survival and development of companies). Public entities in this process have the function of support or partnerships (clusters for example) (depends on the nature of the activity). Thus, the ability of entrepreneurs to approach the innovation process systemically, to actively seek financial resources and to

associate with other partners from business sector (networking, collaboration, clustering) and with third partners (universities, research institutions, business associations, professional organizations) is a prerequisite for improving public support of innovation processes in enterprises. In the current social and economic-political situation in Slovakia, especially in the public sector, change in this area is also possible to achieve by bottom-up initiatives, when the business entities themselves, respectively in mutual cooperation (partnership), are pointing out their problems and requirements, are actively participating in the preparation and implementation of development programs of regions and local governments, more than by passive waiting for help and support from outside, without their own efforts and own initiative.

The basis for starting a change in this sphere is, first of all, pro-entrepreneurial thinking, this means changing the inner philosophy and inner thinking of entrepreneurs about innovation and its key importance for the enterprise itself. As far as they understand innovation as a tool to preserve and develop their business in the long term, they will in the meantime move innovation activity to a side line (both in strategic and financial decisions).

Our proposals for the future: to support the creation and functioning of regional innovation systems (RIS) or/and creating a platform for bringing together a wide range of actors and potential actors in the innovation process - with business and regional and local public representation (if we are talking about business support) and with citizen (if we are talking about more comprehensive regional development, using examples of good practice from abroad also.

The focus of this grouping (formal or informal) would be: informing, developing regional or sectoral innovation strategies, learning from one another, learning from outside examples, sharing information, bringing innovative ideas, helping and working together to promote activities in the territory of the region and creating its own financial resources for such activities (not only European or state activity/initiatives and money can be expected). Over time, the focus of this grouping and its activities would be profiled according to the special concrete needs and requirements of the entities it associates.

The action, results and dissemination of such a unformal platform or formal entity should be subject to mass dissemination, e.g. through: conferences with a wide participation of entrepreneurs in the region (asking for lack of information, assistance, partnerships) or some mass media coverage, through their own newspapers/magazines, websites, mass networking, communication with each of the businesses in the region. In this way, a wide

range of entrepreneurs, who do not have the capacity to develop individual innovation activities or to acquire and search for active information, would be provided with sources of information and knowledge for their innovation intentions.

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