

Methodological dilemmas of studying of innovation ecosystem in cross-national perspective



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The paper describes the methodological dilemmas of the study of innovation ecosystem with examples of cross-national study conducted in Russia and Japan. The methodology of studying innovation ecosystem of innovation actors on the enterprise level, region, country, cross-country are analyzed.

As a result, the comparative analysis of cutting-edge approaches for studying innovations in cross-national perspective is conducted. An algorithm of qualitative research of actors of innovation ecosystem, which allows increasing stability of innovation in practical application is considered. The main problems of investigation of innovations from theoretical and practical points of view are described. As a result, the hybrid model for analysis of innovation ecosystem in the cross-national perspective is proposed.

Keywords: innovation ecosystem, methods of innovation research, cross-national research, Russian innovation environment, Japanese innovation environment.

Introduction

Nowadays innovations are discussed as an important phenomenon on different spheres: academia, political and business. However the more innovations are considered the more questions are arisen.

This paper is devoted to consistent considering methodological approaches for studying innovations with elaborating analytical approach to studying management of innovative companies on the example of Japan and Russia in comparative perspective.

The author suggests exploring system of innovation management in a broader sense taking into account interdependency of actors¹ of innovation infrastructure: government, market, companies, universities, venture capital, brokers etc. In other words, the stimulating state innovation policy doesn't automatically leads to boosting innovation initiatives from participants of the market.

¹ Due to every actor has his own interest they can be labeled as stakeholders. In some cases the stakeholder can be a shareholder. For example, the government is the main shareholder in a state-owned company.

There are several analytical puzzles about success and failure of different government initiatives on development of innovations in Russia and Japan. At the present moment both countries are faced with challenges to increase the level of their performance in innovation but in different aspects. Thus in Russia under conditions of sanctions many innovative programs have been reduced or cut down by SMEs companies and even some big ones. In Japan can be mentioned a scare of entrepreneurship initiatives in innovative sphere.

Additionally, usually innovation structure is studied from one of the perspective: state, market or company. And this approach doesn't allow understanding why some countries have more performed innovation driven economy and others – not. Innovation system maintaining by different stakeholders can be considered doubly: as a static structure with description of stakeholders, their interests and their role in the whole in this system and as a dynamic process of communication between the stakeholders.

It can be supposed that the main understanding of success of innovation development on the level of country can be explained by the features of communication because

without efficient coordination between stakeholders innovations can't be improved. Thus Russian government has taken initiatives to promote particular sectors of economics as innovative-driven ones but in fact not all these products (from these selected manufactures) are demanded my market.

Theoretical Background

Further, we'll focus on literature observation on innovations. First of all, it has be underlined that basing on analysis of literature on management, human resource management has a special meaning in the general system of management in innovation-driven companies.

At the present moment there is no one common concept of innovations and system of measurement of innovation actives of companies both in practice and academic discourse.

The several sources of understanding of innovations can be depicted.

The first group is presented by legal normative documents at the international, national and local levels. For instance, «The Model Innovation Code for the CIS», «The Strategy for the Innovation Development of the Russian Federation until 2020» implemented in Russia.

The next type is related to the different types of methodological recommendations as the basis for monitoring innovation ecosystem in the cross-national perspective, for example, Oslo Manual [14] and «Bridging the Innovation Gap in Russia» [4], «Measuring Design and its Role in Innovation» [6].

The last one is based on the business practice company perspective. This point is especially important for collecting the empirical data. Thus innovation organizations can elaborate their conceptualization of innovations which is not directly correlated with scholars' operationalization.

The materials for studying innovations can be expanded depending on the research purpose.

Besides this, for development of innovations networks play important role along with communication for elaborating these links «<...> knowledge sharing and the horizontal coordination based on it are often informal and based on verbal communications (even tacit understanding)» [3, 13]. Additionally, modern companies have tendency to shift from firm-centric innovation to network-centric innovation concept [13]. Thus networks and communications have important meaning for inciting to efficient performance in innovation companies [11].

Innovations per se are the strong competitive advantage of company. Though examining companies that operate within the framework of one country, the same institutions, the main point is to understand a secret of performance of innovative activity of company. In other words, latent company's know-how that are not explicated to others: «an institution is self-sustaining, salient patterns of social interactions, as represented by meaningful rules that every agent knows and are incorporated as agents' shared beliefs about how the game is played and to be played» [2].

Various types of models of innovation system are designed by researches, but they don't take into account

the detailed complicity of innovation ecosystem. For example, S. Kudryavtceva proposes a model of innovation economy putting in the core such actors as university and R&D structures underlining significance of intellectual capital [12].

Methods and methodology

Then we'll list the main methodological dilemmas of studying of innovation ecosystem in cross-national perspective.

Firstly, it's necessary to set the level of analysis of innovation networks: international, national, regional, etc., as depending on the geographic focus of research.

Secondly, determine the basic composition of the innovation ecosystem. Actors may be varied from one ecosystem to another one on the level of company, region and country.

Thirdly, in order to improve the effectiveness of research, it is recommended to combine qualitative and quantitative tools.

Fourthly, since each innovation ecosystem is a unique composition of its agents, it is advisable to use the method of triangulation, researchers and data.

In other words, the empirical study of innovation networks requires flexibility in the choice of tools and modification for each case.

So the authors proposed consider firstly elaborated analytical model and then hybrid one based on static and dynamic perspective of capturing innovation system that in turn can be adapted for the next studying of management system on the level of innovation companies.

Firstly, it's supposed to study innovations as the system represented by different levels based on elaborating analytical models of resource-based view [5, 8] (see fig. 1).

The first level describes innovation infrastructure of Russia and Japan from the states' perspective. Regardless of the fact that government system in Russia and Japan are different, in both countries state plays important role in stimulating innovations via investments, launching special programs etc Moreover the ownership structure significantly affects on companies' performance and attracting investments for innovation projects. Thus government-owned (or with the main shareholder as a state) organizations in Russia have more probability to receive loans or investment money for realization innovation activities.

The second layer of analysis regards innovation infrastructure from different point of views:

- market (sectoral, national and global);
- implementation of government innovation policy on regional and local levels;
- universities, research and academic organizations as participant of innovation process;
- different types of associations stimulating innovations in a country.

So in Japan and Russia the governments have launched project for development clusters. Furthermore, in Russian Federation there are innovative regions as a driven force to switch resource based economy of Russia to innovation driven one.

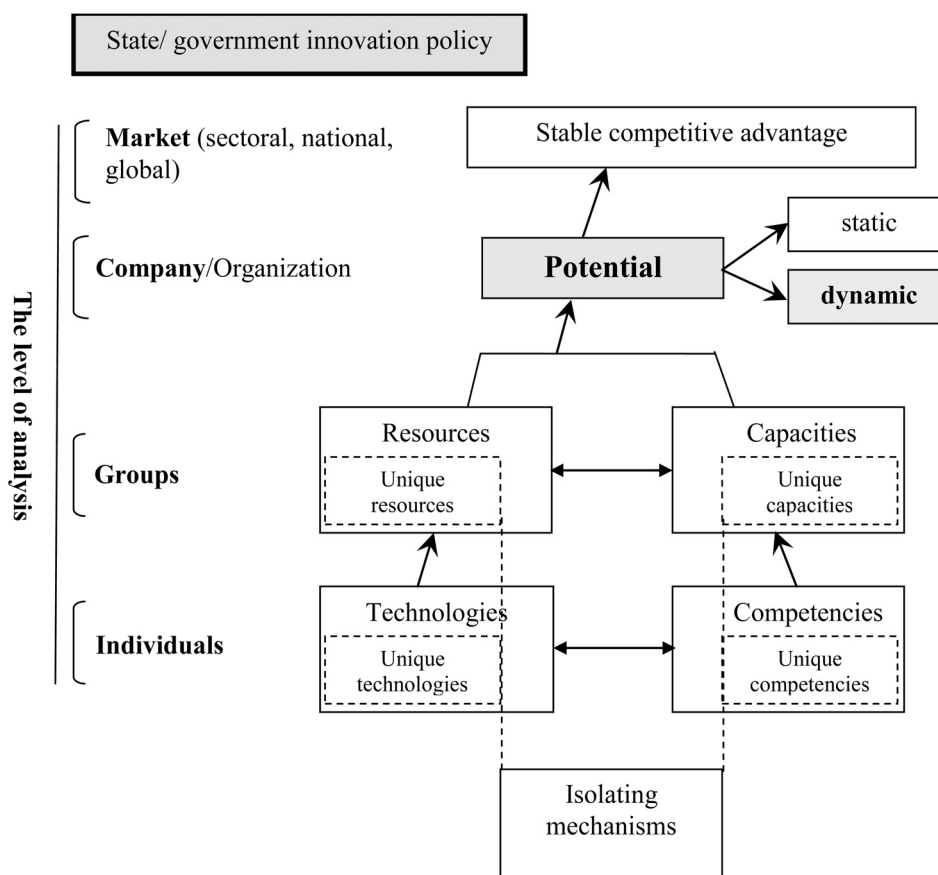


Fig. 1. Model of analytical structure of resource-based view²

Elaborated by A. Kovaleva on the base of the model of V. Platonov, A. Karlik and I. Eliseeva [5, 8]

Special attention must be given to academia sphere in Russia because historically this field has played important role in development of economy. Thus nowadays the higher education system and science in Russia are under the process of reforming. However consequences are contradictory. From the one hand, the pool of the most efficient universities and scientific units (there are still a lot of debated around measurement of performance on these types of structures) has been created. But from other, some fields of education and science are in the background. For instance, in Russia there is path dependence from the Soviet epoch when engineering education was really demanded by the economy and was high level qualified. But after collapse of the USSR «brain drain» of scientists has been started. So at the present moment Russia tries to attract these researches back because of gap between generations of high quality of experts and discontinuation of scientific schools in some extent.

The third level of analysis is focused on company/organization. From this side, innovation policy of company is considered from capability of realization of potential. At the same time this potential consists of two types: static and dynamic. The first one included resources in operating activities (material and non-material) and correlated with them technologies (production and management) and organizational skills and competencies (such as technical and managerial). The dynamic potential in turn is divided into two parts: resources in investment and innovation

activities based on technologies (any new created of training, R&D or construction) and dynamic skills

Secondly, dynamic of innovation structure is focused on disclosing the communication between stakeholders and nature of noises during interaction, identifying their interests, describing process of making decision. Moreover another important measure is management of these types of tension for smoothing collaboration.

As result, the elaborated analytical approach can be submitted for comparative studies of innovations in other countries and for research this issue on different levels, for instance, to compare the innovative-driven companies on the level of company or country. In the whole, combining primary and secondary data for each case (country, sector of economy etc) allows to understand the routes of success and failure of innovations. In short, it can be developed the model for efficient development and implementation of innovations for particular cases that increase the level of performance of innovations in reality.

However the above considered model has some restrictions such as absence of way of each factor, peculiarities of innovation ecosystem on the country level.

That's why, another model has been elaborated as hybrid one which is based on two theoretical approaches: institutional where institutions are considered «as the common knowledge of 'salient features' of repeatedly played games without making a distinction between

² The state as an important stakeholder in case on Japan and Russia is added by the author in this model.

operational and rule-making institutions» [2]. The second one is the resource-based view (RBV) according to which a firm is considered as a bundle of resources (or tangible and intangible assets) [7].

Then we'll describe the hybrid model in more detail examining the complicity of innovation as phenomenon.

The hybrid model for analytical capturing static and dynamic depiction of innovation ecosystem is proposed. Moreover the governments of countries are questioned about the stimulating innovations as one of the driver of economics.

For this reason in the very beginning we make short observation of conceptualization of innovation and innovation ecosystem. Then the hybrid model is described with application to the primary and secondary data for the cross-national perspective.

It was supposed that structure of components and subcomponents of innovations ecosystem by itself doesn't allow explaining why innovations are succeed or failed on the national and company's level. The performance of innovation ecosystem depends on efficiency of negotiation of key stakeholders taking into account of impact of components of innovation environment (such subcomponents as society, culture etc). The more fruitful negotiation, the more innovation environment is developed.

The hybrid model

Innovations by itself have unstable nature. In other words, innovations have to be up-dated and market-demanded. However, on the one hand, there is a gap between supply/ demand schema of commodity positioning (in some cases, innovative ideas failed in the market especially on the phase of start-up). On the other hand, there are companies with the established flexible horizontal and vertical communications with inside and outside stakeholders, including shareholders.

So, it can be presupposed that companies with efficient horizontal and vertical communications inside and outside of the organization are more innovative then other ones because in the process of elaborating innovations knowledge sharing and data rate (time) are crucial features.

The proposed hybrid model allows capturing two perspectives simultaneously: external (as hard components) and internal environment of company (as soft components) of innovation ecosystem. Additionally there is the third group of components (C) as intermediate.

In two blocks of components H and S different stakeholders are described. The third block C as intermediate is presented by subcomponents of innovation ecosystem that impact on both external and internal environment of company.

The idea is to underline the importance of revealing the key stakeholders as representatives of hard, soft components and subcomponents. The components as companies (market), government, academia and company itself are vague phenomena and if they are considered separately it's not possible to explain failures and successes of innovations on the level of companies, markets or economy. That's why this qualitative model proposes to

reveal the main stakeholders in every component and subcomponent, to evaluate their weight in decision making process in communication with other stakeholders for development of innovations.

Importantly, the list of components, subcomponents and stakeholders can be modified for research purpose. For example, a circle of subcomponents and stakeholders on regional level differ from the national one.

Further we consider the all 3 groups consecutively.

The first group «hard components» (H) refers to external environment of company. This H group consists of main components such as companies in the market (local, national or global level), government (government policy on innovation; science and technology policy etc), academia (educational system: schools, colleges, universities, science schools, advanced courses for adults etc). Depending on the focus of analysis, additional components can be added such as venture capitalists, non-government organizations etc.

The next group «soft components» (S) falls into category «internal environment of company». Internal environment of a company is presented by three different levels of analysis based on the model of analytical structure of resource-based view (elaborated on the model of V. Platonov, A. Karlik and I. Eliseeva) [5, 8]. Let's consider this group minutely. Innovation policy of company is considered from capability of realization of potential. At the same time this potential consists of two types: static and dynamic. The first one includes resources in operating activities (material and non-material) and correlates with them through technologies (production and management) and organizational skills and competencies (such as technical and managerial). The dynamic potential of a company in turn is divided into two parts: resources in investment and innovation activities based on technologies (any new training, R&D or construction) and dynamic skills. Isolating mechanisms allow to company to keep their know-how and make her different from other organizations [5].

The last group of subcomponents (C) refers to special types of components that can be embedded simultaneously to both types of environment of company: society, culture, business practices etc. (for instance, attitude to innovations) and at the same time on will of employees to propose new ideas, to be ready for changes etc.

The abovementioned description defines only static picture of the model of innovation ecosystem and answer to the question «what».

However it's crucial to understand the causes of various level of development of innovations environment in cross-national perspective. In other words, it's necessary to answer to a question «why» innovations are developed differently on the level on regions, companies in different countries. For this reason, the dynamic picture is proposed in the hybrid model (fig. 2).

It was supposed that the external and internal environment of company by itself doesn't guarantee boosting of innovations. The key factor of development of innovations is efficient communication among actors as stakeholders. Negotiations among participants of innovation ecosystem make the components alive and all innovation ecosystem, in the whole. Moreover,

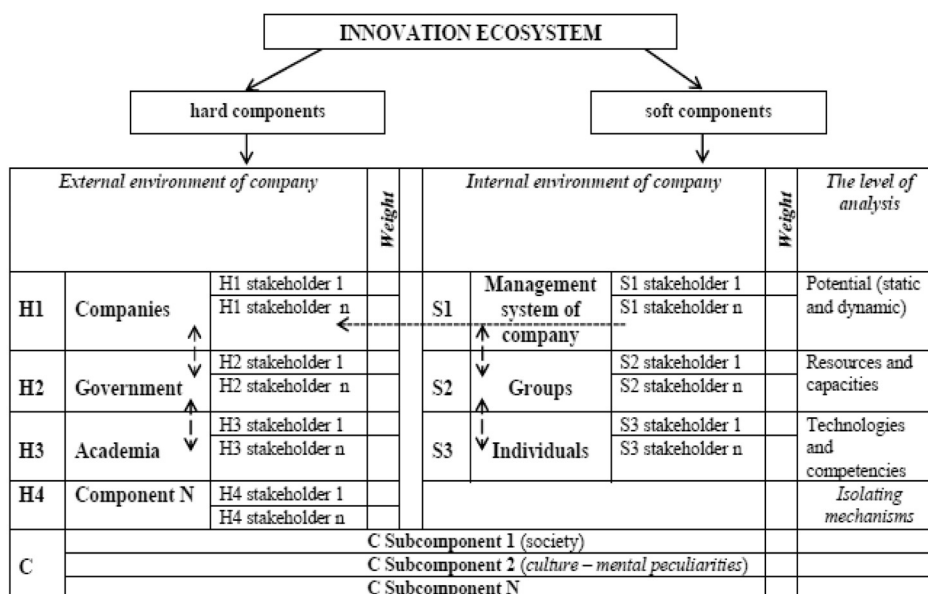


Fig. 2. Hybrid model of innovation ecosystem

Source: prepared by A. Kovaleva (more details are in [9, 10])

communication failures between stakeholders lead to shortcomings in improvement of innovation ecosystem.

The possible ways of communication are marked by arrows on the schema of the hybrid model. The arrows are divided into two categories: one side and two sided arrows that indicate ways of directions of communication such as one- or two-way.

Thus dynamic perspective of the model is focused on disclosing the communication between stakeholders and nature of noises during interaction, identifying their interests, describing process of making decision. Additionally, another important measure is management of these types of tensions for smoothing collaboration.

Furthermore, impact of each stakeholder and subcomponents can be evaluated using a weight basing on primary and secondary data using analytical scale.

The hybrid model can be applied for studying innovations on the national and local levels in cross-national perspective identifying stakeholders and their weight in each considered cases.

Conclusion

In summary, we discuss the debatable questions regarding the hybrid model.

Firstly, components and subcomponents with their weights are not balanced in external and internal environment of company and seem to be in some cases incomparable.

Secondly, stakeholders have different weight and not always are ready to disclosure the problems in negotiation on innovations.

In the whole, combining primary and secondary data for each case (country, sector of economy etc.) allows to understand the routes of success and failure of innovations. In short, it can be developed the model for efficient development of innovations for particular cases that increase the level of performance of innovations in practice.

As result, the elaborated hybrid model can be submitted for comparative studies of innovations in different countries and for research this issue on different levels, for instance, to compare the innovative-driven companies on the level of company or country.

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Методологические дилеммы исследования инновационной экосреды в кросс-национальной перспективе

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В статье описываются методологические дилеммы изучения инновационной экосистемы в кросс-национальной перспективе на примере проведенного исследования в России и Японии. Методология изучения инновационной экосистемы инновационных субъектов анализируется на уровне предприятия, региона, страны.

В результате проводится сравнительный анализ передовых подходов к изучению инноваций в кросс-национальной перспективе. Далее рассматривается алгоритм качественного исследования субъектов инновационной экосистемы, позволяющий увеличить стабильность практического внедрения инноваций. Также описаны основные проблемы исследования инноваций с теоретической и практической точек зрения. В результате предложена гибридная модель для анализа инновационной экосистемы в кросс-национальной перспективе.

Ключевые слова: инновационная экосреда, методы изучения инноваций, кросс-национальные исследования, инновационная экосреда России, инновационная экосреда Японии.

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