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THE COMPARISON OF INNOVATIVE AND STRATEGIC PRIORITIES OF SMALL AND LARGE COMPANIES IN RUSSIAN LOCAL PRODUCTION SYSTEMS¹

Summary. Industrial companies are the core of the national innovation system. However, large, medium and small enterprises differ significantly in their role in the innovation system, resource potential, strategic priorities and objectives. The paper focuses on a comparative analysis of the strategic priorities of innovative activities of Russian companies of different size. We have identified three types of companies: small innovative companies, large and medium-sized companies with a traditional business model, major innovation-driven companies with an integrated business model. Our analysis of the trajectories of small innovative firms located in Novosibirsk Scientific Center showed that the majority of the companies can be characterized either as spin-off firm or as specialized supplier. Spin-offs are newly established small firms, who have recently separated from the major research labs or parent companies. The typical behavior model for such companies is innovative entrepreneurship. Specialized suppliers are small companies that provide significant contributions to complex manufacturing systems in the form of equipment, parts, tools and software. Innovative objectives of such small companies deal with design and production of the specific elements required for large companies. Large and medium-sized companies with a traditional business model are characterized by the existing structure of commodity output and the supply chain. Characteristic type of innovative behavior for such companies includes incremental product and process innovations. Large innovation-oriented companies with an integrated business model have traditional production units and innovative units in their structure. Innovation priorities of major innovation-oriented companies with integrated business model are consistent with the hybrid model of behavior which combines the traditional model with an innovative entrepreneurship.

Keywords: innovation, business models, strategic priorities, large companies, small, and medium-sized companies.

1. INTRODUCTION

Industrial companies are the core of local or national innovation systems. However, large, medium and small enterprises differ significantly when it comes

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to their role in innovation process, resource potential, strategic priorities, and objectives. The paper focuses on a comparative analysis of strategic priorities of innovative activities of Russian companies of different size.

The complexity of such an analysis is caused by poor availability of data . The latter, in turn, seems to be the consequence of imperfect innovation statistics, lack of information openness in Russian companies, and their unwillingness to inform about innovation in business sectors.

For matching we used:

- official data of State Statistics,
- data collected as a result of special study conducted among small innovative firms located in Novosibirsk Scientific Centre²,
- data collected as a result of special study of small innovative companies under the project “Competing for the Future Today: a New Innovation Policy for Russia”,
- survey of rating agency “Expert RA”,
- inputs for the report of the RSPP “The Competitiveness of Russian Business and its Development in the Near Future”,
- research of the New Economic School (NES) and the Center of Technology and Innovation PriceWaterhouseCoopers.

Heterogeneity of sets of data to be used in this research as well as different approaches to data collection and analysis have made a reliable comparison of specific parameters impossible. Nevertheless, we were able to identify some general facts and trends.

2. INNOVATIVE BEHAVIOR AND STRATEGIC PRIORITIES OF COMPANIES

To characterize the features of innovative behavior, depending on the scale of the business, we have divided companies into three types: small innovative companies, large and medium-sized companies representing traditional business model and large innovation-driven companies with integrated business models (companies with research and production units).

Small innovative companies are extremely important in developed market-oriented countries, since they are the main channel ensuring effective transfer of fundamental research to the real sector. Our analysis of the trajectories of small innovative firms located in Novosibirsk Scientific Center showed that the majority of them are either spin-off firms or specialized suppliers³.

²The study was conducted in 2009–2010 by the group of researchers with the participation of the author. A special questionnaire was worked out. The sample consisted of 60 firms.

³Kuznetsova S. (2010), Small innovative firms: trajectories of development and success factors, “Innovation”, № 12, p. 55–61.

Spin-offs are newly established small firms, which have recently separated from big research labs or parent companies. Usually, at the beginning of their activities such companies rely heavily on the “mother” organization. It can take the form of direct financial support or shared infrastructure. The latter means that a small company is allowed to use space and/or research and production base of the “mother” company or research institute on favorable terms. Typically such companies follow the model of innovative entrepreneurship, within which they select and conduct pilot exploration of scientific and technological ideas.

Specialized suppliers are small companies that provide significant contributions to complex manufacturing systems in the form of equipment, parts, tools and software. Innovative objectives of such small companies deal with the design and production of specific elements required for large companies.

Large and medium-sized companies organised around a traditional business model are characterized by the existing structure of commodity output and supply chain. Certainly, strategic focus of such companies on operational efficiency and financial performance affects their innovation priorities. The study of innovative projects of large Russian companies conducted by the “Expert RA” agency, demonstrated that the majority of projects are designed to increase the quality of traditional products or to upgrade them to higher price segments. Generally, products of large companies on Russian and international markets in terms of price tend to place themselves in the range between products from China and products from the U.S. and Europe. Almost all of the surveyed companies were focused on the Russian market. Almost all presented projects are related to “improving” innovations. Unfortunately, “pioneering” projects aiming at the achieving of the leadership in high-technology industries or creating new markets are missing in the sample⁴.

Thus, characteristics of innovative behavior of large companies representing traditional business model include incremental product and process innovations.

Major innovation-driven companies with an integrated business model have traditional production units and innovative units within their organisational structure involved in the development of new high-tech areas. Unfortunately, there are very few businesses in Russia that can be classified as major innovation-oriented companies with an integrated business model. The most vivid examples are Rosatom State Nuclear Energy Corporation, Russian Technologies State Corporation, Corporation (AFK) “System”, and Federal Grid Company UES.

Innovation priorities of major innovation-oriented companies with integrated business models are consistent with the hybrid model of behavior, which combines the traditional model with innovative entrepreneurship.

⁴ Big Business Innovation. “Expert RA” researches. URL: http://www.raexpert.ru/researches/stimulate_innovation/part1.

Typical innovative behavior models of different groups of companies are summarized in Table 1.

Table 1

Innovative behavior models

Type of company	Characteristics of innovative behavior
Small innovative companies	
– Spin-offs	Innovative entrepreneurship – selection and pilot exploration of scientific and technological ideas
– Specialized suppliers	Design and production of the specific components
Large and medium-sized companies	
Large/medium-sized companies with traditional business models	Incremental product and process innovations
Major innovation-driven companies with integrated business models	The hybrid model (traditional model + innovative entrepreneurship)

Source: adapted by author.

3. INNOVATIVE ACTIVITY OF LARGE AND SMALL BUSINESSES – A COMPARATIVE ANALYSIS

According to the statistics, during the first decade of the 21st century, innovative activity of Russian industry remained low: the number of enterprises involved in innovations remains in the range between 9.3 to 10.6% of the total number of enterprises. The highest indicators of innovative activity are typical for Russian high-tech sectors (telecommunication equipment, aircraft and space vehicles, etc.). In 2009 the corresponding value approached the European average and reached 29%⁵.

In analytical report “Russian innovation index”, dedicated to the evaluation of the status of the components of Russian innovation system, we can read that innovation activity of an enterprise directly depends on its size (see Table 2)⁶.

⁵ Indicators of Innovation in the Russian Federation: Data Book. M.: Higher School of Economics Publishing House, 2012.

⁶ Gohberg L. (ed.) (2011), *Russian Innovation Index*, HSE, Moscow.

Table 2

Innovation activity by the size of business

Number of personnel	Less than 50	From 50 to 100	From 100 to 200	From 250 to 500	From 1000 to 5000	From 5000 to 10 000	More than 10 000
The share of innovative companies (%)	1,2	4,6	7,0	12,5	39	70	76,6

Source: adapted by author.

Thus, innovative activity of small businesses in Russia is much lower than that of the large ones. However, a number of recent studies have demonstrated positive dynamics of the share of small enterprises implementing technological innovation. Leaders in innovation are enterprises in the chemical industry (11.3%) and also enterprises producing electrical, electronic and optical equipment (10.9%).

The causes of low innovation activity of Russian companies are the sectoral structure of the economy as well as the lack of sufficient incentives for innovations. Little competition in the dominant part of the Russian market reduces motivation for innovation. Lack of resources, typical of Russian enterprises, also has a negative impact on their innovative activity.

Russian companies spend much less on innovation than their foreign competitors in relevant sectors. As a result, active enterprises never have enough resources for the innovations.

According to the study by the rating agency “Expert RA”⁷, before the crisis the share of R&D expenditure in revenues of the largest Russian companies (rating “Expert-400”) was about 0.5%, i.e. 4–6 times lower than that of foreign companies. In two last years, the index more than halved to 0.2% of total revenues. Machine building companies are leaders in R&D investments in Russia, but even among them, the ratio of R&D expenditures in relation to revenue does not exceed 2%. In less technologically advanced sectors of the economy the gap is even wider. For example, for Severstal Group the ratio of R&D expenditures to the company’s revenue in 2009 amounted to 0.06%, while the value of the same indicator of metallurgical corporation ArcelorMittal was up to 10 times more. According to some estimates, corporate spending on R&D in Russia rapidly recovered in 2010. However, the return to innovative activities in large Russian companies at pre-crisis levels would only mean the maintaining of the distance to the world’s technological leaders.

⁷ Big Business Innovation. “Expert RA” researches (2013). URL: http://www.raexpert.ru/researches/stimulate_innovation/part1.

Entrepreneurs themselves consider underfunding the leading cause of the sluggish innovative activity of enterprises. According to statistics, 74% of the total expenditure on innovation in industry in 2009 originated from own funds of enterprises. Central budget covered only 3.4% of these costs⁸. Our study confirms that the trend continues for small innovative firms. 98% of respondents used own funds to finance innovation. Among other sources of funding, the majority of respondents pointed to bank loans, public and partners money.

In general, for the Russian industry the share of innovative products in the total sales amounted to 4.6% in 2009. In fact, it should be noted, that such a low value of the index is caused by the crisis in the economy. In the preceding five years, the indicator showed a somewhat higher value. The share of fundamentally new products in total industrial production in Russia is very small, less than one-tenth of a percent. The value of this parameter in the high-tech sector is slightly higher (0.5%). In the total volume of innovative products, the items which are new only for the producing company or improved products, characterized by a low level of novelty, strongly dominate.

High School of Economics survey revealed that only 5% of large innovative companies believe, that their products are new to the world market, the majority focuses on product innovations for national Russian markets⁹.

Innovative activity of large Russian companies is focused primarily on the acquisition of machinery and equipment of foreign manufactures. Even huge companies employing over 10 thousand people prefer importing the key knowledge from abroad. The main reason is deep technological gap, so the follower strategy is perceived as the only alternative¹⁰. Data show that high percentage of companies from the group of innovation-active (34.6%) did not carry out any activity leading to the generation of new knowledge (research, development, design)¹¹. It also indicates that the dominant strategy consists in passive technological borrowing. Although most researchers agree that the borrowing and adaptation could become the main sources of rapid catch-up technology development, the experience of advanced innovative countries confirms that it must be accompanied by the creation of additional new knowledge. In terms of “the ability of companies to borrow and adapt technologies”, Russia was at a 41st place out of 133 markets in 2009¹².

For small enterprises, the average value of an index of the share of innovative products in the total production of goods and services is smaller than the total for

⁸ Gohberg L. (ed.) (2011), *Russian Innovation Index*, HSE, Moscow.

⁹ Indicators of Innovation in the Russian Federation: Data Book. M.: Higher School of Economics Publishing House, 2012.

¹⁰ Gonchar K., Kuznetsov B., Simachov U. (2010), *The Competitiveness of Russian Business and its Development in the Near Future. Inputs for the report of the RSPP*. M.: RSPP.

¹¹ Gohberg L. (ed.) (2011), *Russian Innovation Index*, HSE, Moscow.

¹² OECD Reviews of Innovation Policy: Russian Federation 2011. URL: oecd.org/science/inno/48098600.pdf.

the industry. On the whole in the manufacturing industry, the share of innovative products is 1.5%. Slightly better is the situation in the chemical industry (4%) and in the production of electrical and optical equipment (5.4%).

In our study we used two basic parameters (level of products' novelty and orientation to the national or international market) and distinguished a group of 26 companies (30% of respondents), which we call "leaders". For such companies, predominant sources of technological innovation include privatization of academic research and development of products and processes in rapidly growing sectors (specialized software, scientific instruments, biotechnology, electronics, etc). Average assessment of the level of novelty of produced goods/services for the leaders is rather high: 61.5% of respondents believe that their products are new for the Russian market while 50% consider them new to the world market. Relatively high level of the novelty of products of leading companies is accompanied by the strategy "high quality at a high price". In general, the companies – leaders are following a more proactive approach, they tend to be more open to the outside world and are willing to cooperate with other actors of the innovation system¹³.

4. INCENTIVES AND BARRIERS TO INNOVATION

A number of surveys of Russian companies clearly demonstrate that in general the Russian economic environment does not generate sufficiently strong incentives to increase the innovative activity of companies. However, factors that motivate companies to innovate are essentially determined by their industry and characteristics of the markets. According to companies' executives, only two sectors of the Russian economy (food industry and the ICT sector) have relatively high incentives for innovation in combination with sufficient resources. In the majority of industries, including oil and gas, electronics, automobiles, infrastructure industries the level of incentives for innovation is estimated as very low. Innovative activity of firms is negatively affected by such industry factors as the existing level of competition, low requirements for innovativeness of products and services in the domestic market, complexity of the access to the global markets, low level of intellectual property protection¹⁴.

One of the main objectives of our study of small innovative firms located in Novosibirsk Scientific Centre, was to identify the main barriers to their development and growth. In the questionnaire, we pointed out typical barriers, which were assessed by respondents on a 6-grade scale (5 – the most important, 0 – insignificant).

¹³ Kravchenko N., Kuznetsova S., Usupova A. (2011), *Development of innovative entrepreneurship at the regional level*, "Region: Economics and Sociology", № 1, p. 140–161.

¹⁴ Big Business Innovation. "Expert RA" researches (2013). URL: http://www.raexpert.ru/researches/stimulate_innovation/part1.

As the most significant barrier, respondents listed the lack of funding for starting and developing business. Funding is the key factor for all small business. The majority of new firms are low-budget start-ups launched using personal savings and contributions of friends or relatives. The second barrier is the shortage of qualified staff. Staff limitation becomes more important when a company moves from initial to growth stage of its life cycle. Inadequate laws, high cost of innovation and unknown demand for new products were also recognized as significant obstacles to business development¹⁵.

In the project “Competing for the Future Today: a New Innovation Policy for Russia”, the survey of executives of small innovative companies as well as representatives of medium and large businesses was carried out. In the survey, managers were asked to name three major obstacles restricting innovative development of their companies. As the main obstacles to innovation, representatives of small businesses indicated the lack of available funds within the company, poor availability of external financing and the costs and risks associated with innovation. 18% of respondents consider the lack of qualified personnel a significant obstacle to innovation. Ranking of barriers for large and medium enterprises shows very similar results (Table 3)¹⁶.

Table 3

The most important barriers to innovative development

	Small business, Novosibirsk (score on a 6-point scale)	Small Business (% of respondents who reported this factor)	Large/Medium Business (% of respondents who reported this factor)
1	Lack of financing (3,2)	Lack of available funds within the company (60%)	Lack of available funds within the company (62%)
2	Shortage of qualified staff (2,8)	Poor availability of external financing (50%)	High costs of innovation (33%)
3	Inadequate laws (2,7)	High costs of innovation (40%)	Poor availability of external financing (33%)
4	High costs of innovation (2,4)	Uncertain demand for new offerings (24%)	Uncertain demand for new offerings (23%)
5	Uncertain demand for new offerings (2,3)	Shortage of qualified staff (18%)	Shortage of qualified staff (19%)

Source: adapted by author.

¹⁵ Kravchenko N., Kuznetsova S., Usupova A. (2011), *Development of innovative entrepreneurship at the regional level*, “Region: Economics and Sociology”, № 1, P. 140–161.

¹⁶ Competing for the Future Today: a New Innovation Policy for Russia (2010). URL: <http://www.opora.ru/analytics/our-efforts/2010/06/30/>.

Thus, we can draw a general conclusion that major barriers to innovative development of Russian companies are financial and demand constraints, imperfect institutional environment and human potential.

5. CONCLUSION

Although big companies are at the core of Russian innovation system, most of the largest Russian companies focus their innovation on the domestic market by implementing a strategy of passive technology adoption. A contribution of small business to innovative development of the country is still fairly low, but the results of surveys and prominent success stories of small innovative firms show that a wave of small innovative companies with products that meet world standards of novelty and focusing on global markets is quickly emerging.

Cooperation of participants of the national innovation system is crucial for its effective functioning. Increasing the contribution of small business in the innovative development should be supported by the creation of innovative infrastructure, generation of demand for innovative products on the side of big business and the state.

REFERENCES

- Big Business Innovation. "Expert RA" researches (2013).
Available at: http://www.raexpert.ru/researches/stimulate_innovation/part1.
- Competing for the Future Today: a New Innovation Policy for Russia (2010).
Available at: <http://www.opora.ru/analytics/our-efforts/2010/06/30/>.
- Gonchar K., Kuznetsov B., Simachov U. (2010), *The Competitiveness of Russian Business and its Development in the Near Future. Inputs for the report of the RSPP*. M.: RSPP¹⁷.
- Gohberg L. (ed.) (2011), *Russian Innovation Index*, HSE, Moscow.
- Indicators of Innovation in the Russian Federation: Data Book. M.: Higher School of Economics Publishing House (2012).
- Kravchenko N., Kuznetsova S., Usupova A. (2011), *Development of innovative entrepreneurship at the regional level*, "Region: Economics and Sociology", № 1, p. 140–161.
- Kuznetsova S. (2010), *Small innovative firms: trajectories of development and success factors*, "Innovation", № 12, p. 55–61.
- OECD Reviews of Innovation Policy: Russian Federation (2011).
Available at: oecd.org/science/inno/48098600.pdf.

¹⁷ Russian Union of Industrialists and Entrepreneurs.