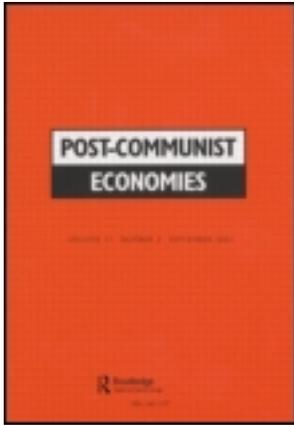


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### Innovative actions and innovation (in)capabilities of Russian industrial companies: a further extension of observations

Igor Gurkov <sup>a</sup>

<sup>a</sup> National Research University - Higher School of Economics, Moscow, Russia

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## **Innovative actions and innovation (in)capabilities of Russian industrial companies: a further extension of observations**

Igor Gurkov\*

*National Research University – Higher School of Economics, Moscow, Russia*

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This article reports the results of a further extension of a quasi-longitudinal survey among top corporate executives in Russian industry, presenting a snapshot of current innovation actions and innovation capabilities of Russian enterprises. Through comparison of the responses from the 2004 and 2010 surveys, changes in the business and management of Russian companies are examined. The perceived abilities to perform particular stages of innovation projects have significantly increased and Russian companies successfully use contractors for various types of innovation activity. However, the intensity of innovations remains low and the resources that can be utilised to create innovations at Russian CEOs' disposal remain limited as few actual innovation projects satisfy the criteria imposed by Russian owners to improve the overall profitability of the firm. The owner's criteria for evaluating innovation effectiveness particularly impede radical product innovations and breakthrough innovations in production technologies. The results of this study indicate that the relationship between the perception of innovative capabilities by CEOs and the intensity of innovations proved to be a valuable research construct and this suggests that comparative study of innovation capabilities of firms in emerging and developed economies would be a profitable extension of this research.

Five years ago I published an article on innovation actions and capabilities of Russian industrial companies (Gurkov 2006). This research was conducted during a period of rapid economic growth, partly based on import substitution after the fourfold devaluation of the ruble in 1998 and partly on very favourable price dynamics for the oil, gas and metals that constituted the major part of Russian exports at the time. Russian industrial companies had accumulated substantial financial reserves and, for the first time in modern economic history, were able to get easy access to foreign credits. However, despite all these positive factors, our conclusions in 2006 were rather pessimistic:

The intensity of past innovations has little impact on further successes as there is minimal accumulation of routines of innovative actions within companies . . . Further accumulation of innovative capabilities by Russian industrial enterprises will be a rather slow and painful process. The successes in innovative development of some export-oriented 'national champions' will be limited by the inability of their local partners to adapt to new requirements. Locally-oriented companies with sufficient financing will be inclined towards adoption of the existing technological solutions implemented by turn-key operators. In both cases breakthrough innovations in production and management technologies will be rare and

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\*Email: [gurkov@list.ru](mailto:gurkov@list.ru)

will not determine the overall picture. In this respect, the sustainability of development of the Russian industrial sector is not secured (Gurkov 2006, p. 297).

We cannot pretend to be prophets, as the reality turned out to be worse than we had predicted. Even before the financial crisis, in 2006–08, the largest Russian corporations spent less than 0.5% of their sales revenue on innovation activities (Grishankov 2009). The financial crisis resulted in sharp and deep contraction of most industries (from 2.2% in oil and gas to 56% in machinery and equipment and with overall contraction of Russian industrial output by 24% between July 2008 and March 2009) (Illarionov 2009). The industrial recovery turned out to be slow and painful. At the end of 2010 the overall volume of industrial output was still lower than in 2007. Ardent efforts by the Russian Presidency to start ‘modernisation’ of the national economy have not so far resulted in any visible successes. However, we should remember the proverb ‘Necessity is the mother of invention’ and propose that the post-crisis recovery may be partially based on intensification of industrial innovations. As in our survey of corporate executives implemented at the midst of the crisis, in December 2008–March 2009, almost a third of companies planned to ‘accelerate design and market launch of new products’ (Gurkov 2009) we expected to examine the results of such plans. Thus in 2010 we proceeded to conduct a survey of CEOs of Russian industrial companies on innovative actions implemented in the previous years. We aimed to present a ‘stereoscopic’ view of both real innovative actions and perceived innovation capabilities of Russian industrial companies.

This article is organised as follows: after a short introduction on the empirical basis for our analysis, we present an optimistic view on innovative capabilities as CEOs of Russian industrial companies perceive them. Next, we present a rather pessimistic view on the effectiveness of innovative actions. Discussion and suggestions for further research occupy the last section of the article.

### **Empirical basis for evaluating innovation activities and innovative capabilities of Russian industrial companies**

Our observations of innovative actions of Russian industrial companies through surveys of corporate executives started in 1998.<sup>1</sup> In 2004 we were able to collect 450 questionnaires from industrial companies with 100 and more employees. Such respondents represented companies in 10 industries (extractive industries, energy complex, metals, chemicals, pharmaceuticals, timber products, textiles, food-processing, electronics and machine-building). In late 2010 we were able to collect in total 140 questionnaires from CEOs of industrial companies and to use for further analysis 103 questionnaires (others were excluded because important parts were missing). We made especial efforts to achieve similarity of the 2004 and 2010 samples in terms of the size of companies, measured by number of employees, and several other parameters such as the proportion of independent companies and subsidiaries and the presence of companies from all the industries analysed in 2004.

### **Innovation capabilities of Russian industrial companies – an optimistic view on considerable improvement**

Innovation capability is broadly defined as ‘the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders’. From a managerial point of view, the absolute novelty of an idea is not important; the most important thing is that innovation represents a new practice for the firm.

New products are usually the most visible part of innovation processes; in most cases the necessity to develop and launch new products serves as the main impetus for innovations in processes and systems. Thus in our study innovation capabilities are defined as the ability of a firm to perform certain works within a new product launch project, namely:

- securing financing for a new project;
- gaining access to the necessary technology (if a project involves mastering new technology);
- installation and launch of new production, storage and sales capacities (plants, production shops, warehouses, sales points);
- attracting necessary labour (or retraining the existing workforce);
- amendment of current job design, changing the priority of particular tasks;
- management of the efforts of various functional departments of a firm;
- maintaining control over innovation expenditure;
- determining customers' preferences and thus the necessary properties of a new product;
- prototype design;
- reaching the necessary level of quality and stability of production processes;
- synchronisation of the efforts of partners in the value chain (suppliers and distributors);
- determining an optimal price level for a new product;
- achieving 'mutual understanding' with producers of similar products;
- gaining necessary licences and certificates;
- running promotion campaigns for new products;
- creating new distribution channels.

The perceived difficulty in implementation of particular tasks and actions expressed by CEOs of Russian industrial companies is presented in Table 1.

The results presented in Table 1 are significantly different from the expected results in terms of positive attempts at innovation activities. It seems that CEOs of Russian industrial enterprises have learned a lot during the past decade. 'Ensuring new project financing' is still at the top of the difficulties for any innovation project, but does not represent, as it used to, an unachievable task for the majority of companies. Technical aspects of innovation projects such as accessing technology, achieving the desired quality level and maintaining technological discipline have moved towards the middle of the list of difficulties, while organisational aspects of innovations in terms of achieving coordination between operations of different departments and changing the range of executives' and specialists' responsibilities have moved towards the very bottom of the list of possible difficulties. Instead, marketing aspects of innovations through marketing channels and promotion activities as well as tasks such as coordination with suppliers and overcoming the resistance of competitors have become the most difficult tasks in innovation projects. These results seem to indicate the growing maturity of the market economy in Russia.

Having demonstrated the significant improvement of innovation capabilities of Russian industrial companies during the last decade, we tried to discover the cause for this improvement. Usually the accumulation of firms' capabilities is attributed to 'learning by doing' and 'learning by collaborating'. As the firm repeatedly performs innovation actions, it should create special routines for such actions. Thus the outcome of such actions may still be new for the firm but the actions themselves may be viewed as standard. In such situations 'learning by doing' may take place in innovation activity. However, the relationship

Table 1. Difficulties of implementing certain types of activities as estimated by CEOs of Russian industrial companies (%).

Type of activity	Relative difficulty of implementing the activity	2004	2010
Ensuring new project financing	Not difficult	6.2	12.2
	Moderately difficult	44.9	57.8
	Extremely difficult	49.0	30.0
Mastering new distribution channels	Not difficult	n.a.	12.1
	Moderately difficult	n.a.	58.2
	Extremely difficult	n.a.	29.7
Achieving mutual understanding with producers of similar products	Not difficult	22.0	23.8
	Moderately difficult	57.8	47.6
	Extremely difficult	20.2	28.6
Ensuring adjustment of business partners	Not difficult	17.3	18.6
	Moderately difficult	51.9	57.0
	Extremely difficult	30.8	24.4
Implementing promotion campaign for a new product	Not difficult	n.a.	14.9
	Moderately difficult	n.a.	60.9
	Extremely difficult	n.a.	24.1
Recruiting necessary labour	Not difficult	16.1	22.3
	Moderately difficult	45.8	55.3
	Extremely difficult	38.1	22.3
Gaining access to new technology	Not difficult	24.7	32.2
	Moderately difficult	55.1	48.9
	Extremely difficult	20.0	18.9
Achieving desired quality level	Not difficult	13.3	15.8
	Moderately difficult	53.2	69.5
	Extremely difficult	33.5	14.7
Achieving required level of technological discipline	Not difficult	15.6	18.1
	Moderately difficult	60.5	70.2
	Extremely difficult	23.9	11.7
Establishing the optimum level of sale prices for new products	Not difficult	9.2	36.6
	Moderately difficult	50.2	53.8
	Extremely difficult	40.5	9.7
Achieving coordination between operations of different departments	Not difficult	18.2	39.6
	Moderately difficult	55.1	51.0
	Extremely difficult	26.7	9.4
Ensuring control and accounting of expenditure for innovation activities	Not difficult	34.0	51.1
	Moderately difficult	54.0	41.3
	Extremely difficult	11.9	7.6
Identifying specifications of products desirable for consumers	Not difficult	34.4	43.3
	Moderately difficult	52.6	50.0
	Extremely difficult	12.9	6.7
Changing range of executives' and specialists' responsibilities	Not difficult	32.3	49.5
	Moderately difficult	48.0	45.3
	Extremely difficult	19.4	5.3

between innovation capabilities and the intensity of innovations is not straightforward. On one hand, it seems natural that intensive innovation efforts form the basis for innovation routines and thus the objective level of innovation capabilities, i.e. the ability to perform the particular tasks and actions, should be higher for firms actively involved in mastering new products. On the other hand, a greater number of innovation projects may lead to lower subjective assessment of the capabilities of a firm by its top executives as the accumulation of innovation routines may be slow and an executive may repeatedly face the same

difficulties in implementation of innovation projects. Thus we first examined the actions undertaken by the firms surveyed over the past few years and next tried to find the relationship between the regularity of particular types of innovation and the perceived difficulties in performing those R&D activities. The data presented in Table 2 show low regularity of innovation activity in Russian companies. Only ‘purchase and installation of new equipment’ and ‘mastering new methods of quality control’ are performed regularly by a third of the firms surveyed. Design and launch of a new product is a regular practice of a quarter of firms. Some firms also reported irregular attempts to perform various types of innovation tasks, but there is also a significant share of firms (45%) that has no regular practices of innovation at all.

We tried to find differences between the companies where at least some innovation tasks are performed regularly and the companies without such experience. No significant differences were found in perceived difficulties of innovation tasks between the two groups of companies. This confirms that capabilities to perform innovation tasks are neutral to ‘learning by doing’.

The effect of ‘learning by collaborating’ was assessed by comparison of difficulties in performing innovation tasks across companies with various levels of inter-company innovative collaboration such as participation in innovative consortia, joint ventures and other activities. Here we found that inter-company collaboration in Russian companies was achieved only under extreme necessity. The few companies that regularly use consortia and joint ventures for innovation projects reported extreme difficulty of such actions as ‘installation and commissioning of new equipment’, ‘orchestration of various departments’, ‘discovering customers’ needs’ or ‘prototype design’.

Table 2. Intensity of innovative actions of the firms as reported by their CEOs in 2010 (%).

Type of actions	Characteristics of actions			
	Not considered	Under consideration	Implemented as pilot projects	Implemented on a regular basis
Purchase and installation of new equipment and production facilities	10	25	29	35
Mastering new methods of quality control	9	35	22	33
Revision of supply schemes	20	36	15	29
Mastering new distribution channels	14	37	25	23
Active recruitment of new personnel	29	25	23	22
Acceleration of design and market launch of new products in traditional business area	15	34	29	21
Purchase of patents and licences	53	21	6	19
Implementation of new remuneration schemes	25	37	21	16
Mastering new financing schemes	24	46	18	12
Acceleration of design and market launch of new products in new markets	40	30	23	6

We cannot exclude an additional plausible reason for accumulation of innovative capabilities that we call 'learning by private tutoring'. What is meant here is the use of subcontractors and consultants either for executing complete sets of innovation actions from idea to implementation or for contracting out particular steps of innovation projects.

For a proper understanding of the impact of 'private tutoring' on accumulation of innovation capabilities we examined the role of subcontractors in the actions actually implemented and compared the perceived difficulties in executing the particular types of actions.

The role of subcontractors for companies that regularly or occasionally launch products in their existing spheres of activity is presented in Table 3.

The majority of tasks directly related to the launch of new products are executed with the aid of subcontractors (consultants). If we consider only the firms that actively launch new products, 75% of these firms use subcontractors for at least several types of innovation tasks. For example,

- active mastering of new methods of quality control was assisted by subcontractors in 85% of cases, including 25% of the cases of 'limited use of subcontractors';
- active use of new methods of personnel assessment was assisted by HRM consultants in 83% of cases, including 22% of the cases of 'limited use of subcontractors';
- when the firms surveyed were actively involved in purchase and installation of new equipment, this was assisted by subcontractors in 65% of the cases, and in installation and commissioning in 68% of the cases.

Our results testify to the emergence within Russian industries of an established system of specialised firms providing support to complex innovation projects or just assisting industrial companies in executing specific innovation tasks. This is a rather underexplored and understudied phenomenon for post-Soviet Russia.

Of course, the quality of assistance provided by subcontractors and consultants may vary, as may the reasons for the use of subcontractors. The literature on strategy indicates that subcontractors may be invited to perform tasks that are either too difficult or too easy

Table 3. Use of subcontractors (consultants) by the firms that regularly or occasionally introduce new types of products in the existing sphere (assessment by CEOs) (%).

Type of actions	Extent of use		
	Not used	To some extent	Actively used
Purchase of necessary equipment	16	46	38
Discovering customers' preferences for product characteristics	42	23	34
Obtaining necessary government licences and certificates	41	26	33
Executing promotion campaigns	39	30	31
Recruitment of new personnel	29	40	31
Prototype design	31	41	28
Gaining access to new technologies	34	38	28
Mastering new distribution channels	39	37	24
Implementation of new remuneration schemes	53	26	21
New forms of training	32	49	19
Creation of new technologies	51	31	18
Search for new ideas	53	30	17
Design of new organisational structures	77	14	9

for the firm to execute itself, so we may stipulate a dual relationship between the extent of use of subcontractors and the degree of difficulty in performing specific actions within innovation projects. We performed the necessary statistical analysis<sup>2</sup> and discovered that the use of subcontractors and consultants may coincide with both high and low levels of perceived innovative capabilities. The use of subcontractors in technology and capacity development through the purchase and installation of new equipment and developing new technologies indeed makes many types of innovation works easier by ‘achieving the required level of technological discipline’, ‘achieving the desired quality level’, ‘ensuring control and accounting of expenditure for innovation activities’ and even ‘achieving mutual understanding with producers of similar products’. The list of tasks facilitated is a sign of the inclination of Russian industrial firms towards turnkey projects.

At the same time, many other types of innovation tasks that are actively contracted out indicate the lack of corresponding abilities and competences. First and foremost, ‘support in establishing new methods for quality control’ is related to higher perceived difficulties in ‘changing the range of executives’ and specialists’ responsibilities’, ‘ensuring control and accounting of expenditure for innovation activities’ and ‘achieving the required level of technological discipline’. Lobbyists are engaged if ‘obtaining necessary government licences and certificates’ is a tricky task for the firm. Finally, organisational and HRM consultants are engaged only when design and implementation of new performance appraisal and remuneration schemes meet serious resistance from employees.

Thus we are unable to attribute the improvement we found in the innovation capabilities of Russian companies to firms’ own actions through ‘learning by doing’, nor to ‘learning by collaborating’ or ‘learning by tutoring’. We may still assume that some other factors contribute to higher assessment of innovative capabilities of firms by their own top executives. However, our inability to find clear connections between the actions of firms and perceived capacities to perform particular actions leads to a more pessimistic view of the innovation actions of Russian firms, which is presented in more detail in the following section.

### **Innovation actions of Russian industrial companies – a pessimistic view on the motives and low effectiveness of industrial innovations**

After a rather positive picture of their perceived innovation capabilities we should deal with a darker side of the innovation process in Russian industrial companies – the lack of investment. The low investment level is a long-recorded phenomenon in Russia: even during the best years of accelerated economic growth in the mid-2000s the volume of investment in fixed assets did not surpass 18% of GDP (Kossov, in press). However, our results show extremely low intensity of investment in 2009–10: 32% of firms did not make any investments during that period, while a further 43% of companies made investments equal to less than 10% of their annual sales. Investments that surpassed 10% of annual sales were made by a quarter of the firms surveyed. The range of sources of investment finance remains narrow; the major source is retained profits. Bank credits and financial leasing were used by 45% of the firms surveyed, additional capital injections by shareholders were reported by 24% of the firms, and just four firms reported the use of governmental funds. In the last months of 2010 and the first months of 2011, which were considered to be a period of economic recovery, the volume of investment in fixed assets continued to decrease.

We cannot attribute the low level of investment to the general lack of financial resources as between August 2008 and March 2011 the capital outflow from Russia

totalled USD260 billion. Instead, this capital flight indicates the low attractiveness of the Russian economy to local investors. In this respect it is interesting to look again at the data presented in Table 2. A third of CEOs reported routine purchase of new machinery and equipment but only a quarter of companies made significant investments. The difference indicates that many innovative actions are in fact minor alterations of existing processes and systems. Indeed, we found that the level of investment was strongly correlated with process innovations like ‘mastering new methods of quality control’ and with revision of HRM systems, while product innovations and ‘gaining access to new technologies through purchase of patents and licences’ have very low correlation with the level of investment (Table 4).

We should remember that two-thirds of CEOs indicated that ensuring financing for innovation projects was not an ‘extremely difficult task’ (Table 1). If we take their words seriously, we should explain why they refuse to spend time and money on such ‘not extremely difficult’ tasks.

Here we approach the key point in our analysis as we seek to understand why product and technological innovations in Russia are not attractive either to local investors or to top managers of Russian industrial companies. In our opinion the major cause of low innovation attractiveness is unrealistic expectations about innovations. In our survey we asked CEOs about motives for innovations.<sup>3</sup> CEOs mentioned ‘pressure of customers’ (79%), ‘necessity to meet new government demands’ (76%) and ‘pressure of suppliers’ (65%), but at the very top of the list was ‘to increase the firm’s profitability’ (86%). Our analysis revealed that only ‘mastering new distribution channels’ in 2008–09 had a positive impact on the level of profitability of the firms surveyed in 2010.<sup>4</sup> At the same time, the requirement for innovations to improve the profitability of the overall business portfolio puts almost impenetrable barriers in the way of breakthrough product innovations and development of completely new, untested technologies. It seems that the natural absence of easy-to-implement business ideas offering above normal profitability in Russian low-tech industrial sectors constitutes the major obstacle for local investors to allocate sufficient funds for product and technological innovations in their companies.

Of course, we cannot claim that owners of Russian industrial companies are totally against innovations. When CEOs indicate as the major reason for innovations ‘the pressure of owners’, their companies are putting greater emphasis on ‘purchase of patents and licences’, ‘mastering new methods of financing’ and ‘acquisition of other firms’.<sup>5</sup> This may

Table 4. Correlations between level of investment and intensity of particular actions in 2009–10.

Type of actions	Corr.	Sign.
Revision of supply schemes	0.167	0.109
Acceleration of design and market launch of new products in traditional business area	0.191	0.065
Acceleration of design and market launch of new products in new markets	0.151	0.145
Mastering new distribution channels	0.272	0.008
Purchase and installation of new equipment and production facilities	0.315	0.002
Mastering new methods of quality control	0.365	0.000
Purchase of patents and licences	0.154	0.140
Mastering new financing schemes	0.248	0.016
Active recruitment of new personnel	0.329	0.001
Implementation of new remuneration schemes	0.305	0.003

be fine, but such actions rarely coincide with radical product and technological innovations. The type of ownership (concentrated or dispersed private ownership, state ownership) has no statistically significant consequences for the intensity of innovations implemented. We also expected that the participation of CEOs in ownership of their firms might have an impact on the intensity of innovations. As all types of CEOs were represented in our sample (10% of the CEOs surveyed were sole proprietors of their companies, a further 13% possessed controlling or blocking holdings, 17% possessed minority stakes and 60% did not own shares in their company) we performed the necessary statistical analysis. However, no visible differences in intensity of innovations were discovered.

In general, the present owners of Russian industrial companies do not favour radical product and technological innovations as it is difficult to implement such innovations through turnkey projects, they have longer payback periods and evaluation of such projects is based essentially on vague estimations and unsure predictions.

### **Invitation to discussion and suggestions for further research**

We have tried to present a ‘stereoscopic view’ on current innovation processes in Russian industries using spectators with lenses of different colours. We have shown that during the 2000s Russian industrial companies have to some extent improved their innovation capabilities – or at least that CEOs of Russian companies feel more self-confidence facing various tasks related to innovations. Russian companies have also mastered the use of subcontractors and consultants for the majority of innovation tasks. The use of subcontractors for capacity development, as well as (rather rare) engagement of organisational and HRM consultants make many types of innovation tasks easier to implement. In cases of extreme difficulty of such actions as ‘installation and commissioning of new equipment’, discovering customers’ needs’ and ‘prototype design’ Russian companies form innovation consortia and joint ventures. In general, more or less *effective routines* for innovation work are established in a majority of Russian industries. At the same time, *effectiveness of industrial innovations remains low* as most types of innovations, especially radical product and technological innovations, do not directly move the firm towards the desired outcome of quick and certain rise in the overall profitability of the firm. Both owners and CEOs express the leading motive of overall profitability, and for medium-size Russian companies these two groups largely overlap. Unmet expectations impede the allocation of sufficient investment for innovations and limit the number of ‘active innovators’ in all Russian industries. In turn, as most innovations are implemented in an occasional and inconsistent manner, accumulation of specific innovation capacities in a firm is an extremely slow process.

The reported prevalence of profitability as the leading motive of innovations among Russian owners and top executives presents a serious theoretical problem. On one hand, the Schumpeterian tradition in innovation studies puts a special emphasis on ‘the rent of innovators’, and in this respect there is nothing wrong with the desire of owners and their agents to profit from innovations. On the other hand, in the mature industries that constitute the overwhelming part of the Russian industrial sector ‘the rent of innovators’ mostly emerges through manipulation of the value chain and this was proved again by our analysis of innovations that affect firms’ profitability. Examples of companies from mature industries that succeeded in combining manipulations of the value chain with product innovations are rare (Zara, Dell) and even these companies stay away from radical product and technological innovations.

Our results may suggest that the tendency of academic studies and especially innovation textbooks to present innovations as ‘universal medication’ should be seriously revised and instead the emphasis should be placed on presenting innovations as merely necessary ‘hygienic procedures’, ‘fitness exercises’ and ‘vitamins’ that assist companies to stay ‘in shape’. However, we cannot be certain that our advice is applicable beyond Russia’s border. In this respect, our major suggestion for further studies is to create possibilities of international comparison of motives for innovations, perceived innovation capabilities and innovative actions implemented. As the corresponding instruments have been used repeatedly in mass surveys of corporate executives and proved their reliability and sufficient validity, we will be glad to supply them to other researchers. Such a comparative study should embrace various industries and types of businesses in both emerging and developed economies. It may contribute to studies of productivity growth and bring additional insight into research on cross-country capital flows and diffusion of innovations. Evaluation of perceived difficulties in innovation during upturn and downturn periods may produce interesting and perhaps unexpected results on the efficiency and effectiveness of national innovation systems.

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### Notes

1. The English version of the questionnaires was presented as Appendix 1 in Gurkov (2005).
2. One-way ANOVA with post hoc multiple comparison by Duncan’s criterion with significance at 0.05.
3. For a detailed analysis of motives for innovations and expectations of Russian industrial CEOs about intra-organisational effects of innovations see Gurkov and Morgunov (2010).
4. We used regression analysis to reveal the possible impact of innovations on various parameters of firms’ performance as well on their competitive position. The lower level of costs is partly achieved by ‘revisions of supply schemes’ and ‘mastering new methods of financing’.
5. All reported differences were discovered by T-tests and had significance of at least 0.080.

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