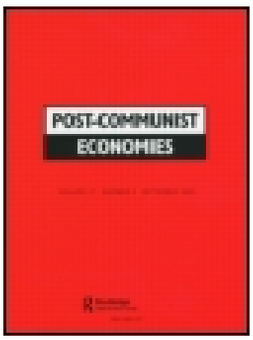

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Innovative Actions and Innovation (In)capabilities of Russian Industrial Companies — An Extension of a Quasi-longitudinal Study

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Abstract

This article reports the results of an 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 between the situations in 2002 and 2004, changes in the business and management of Russian companies in recent years are examined. The intensity of innovation significantly increased in 2003–04, but the resources for innovation at Russian CEOs' disposal became even more limited than before as the traditional lack of finance coincided with a growing shortage of qualified labour. Moreover, the intensity of past innovations has little impact on further successes as there is minimal accumulation of routines of innovative action 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 will not determine the overall picture. In this respect, the sustainability of development of the Russian industrial sector is not secured.

Since the late autumn of 1998 most Russian industries have experienced economic recovery. The question arises, to what extent can this positive economic development be attributed to extensive factors (import substitution, re-use of previously idle production facilities etc.) and what is the role of intensive factors, including new patterns and skills of strategic and operational management. More precisely, we aim to identify the results of organisational learning that may have occurred during the years

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of prosperity. This question is of crucial importance for determining the medium-term prospects of the Russian economy. Indeed, the extensive factors of economic development mentioned (import substitution and re-use of idle production capacities) have lost their significance since 2001–02. Yet the current unique situation for the Russian energy sector and basic raw-materials industries will not last forever.[1] The more Russian domestic and overseas markets reach equilibrium, the more economic development of Russian industrial companies will depend on new products and processes, i.e. on innovations. Thus the task of tracing the results of organisational learning and determining the possible future sustainability of Russian economic development may be formulated as an assignment to evaluate the current *innovation capabilities* of Russian companies.

Innovation Capabilities — Definition and Expected Relationship with Innovation Practices

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'.[2] Innovation capability, as a holistic concept, is composed of mutually reinforcing practices and processes within the firm. Therefore, it will be useful to recall here the major steps of any innovation project:

- generation of new business idea (or copying such an idea from various external sources);[3]
- project formulation, budgeting and financing (from internal or external sources);
- prototype design;
- gaining access to the necessary technology (if a project involves mastering new technology);
- amendment of the current job design changing the priority of particular tasks;
- orchestration of the efforts of various functional departments of a firm;
- attracting the necessary workforce (or retraining the existing employees);
- production of a 'trial set' of a new product and market testing;
- determining the optimal price and quality[4] of a new product.

Observation of innovation practices of Russian companies added three important elements to the standard list of innovation measures, namely:

- synchronisation of the efforts of partners in the value chain (suppliers and distributors);
- reaching 'understanding and acceptance' of the firm's actions by competitors;
- securing the support of local authorities where production and sale take place.

All the actions mentioned are interconnected in practice. Therefore, we group these actions according to the specific features of the processes. Thus, financing a new project, gaining access to new technology, attracting (or retraining) the necessary workforce and getting the tacit or open approval of authorities (known as 'administrative resources' in Russia) may be combined into *capabilities to secure resources for innovation.*

Changes in job descriptions and adjustment of the relative importance of various tasks, together with synchronisation of various departments, may be called *internal organisational innovation capabilities*.

Actions to secure the necessary quality level and efforts to align the actions of business partners may be called *technological innovation capabilities*.

Finally, the ability to discover the needs of customers, to set an attractive price and effective forms of promotion, and the capacity to reach implicit agreement with actual and potential competitors may be labeled *marketing innovation capabilities*.

Processes of accumulation and use of innovation capabilities may be viewed as processes of organisational learning. In any learning and especially in 'learning by doing' the more you practice the more capable you become. Therefore, a general proposition about the relationship between innovation capabilities and innovation practice may be formulated as follows: *the higher the intensity of particular innovation actions of a firm, the higher should be its corresponding innovation capacities.* Indeed, intensive innovation should lead to accumulation of 'innovation routines' — patterns of action that have proved their effectiveness in a specific firm's context and facilitate further innovation.

However, as in any learning, the process of accumulation of capabilities is not automatic. Encouragement is important in organisational learning as it is in any learning process. The firm must allocate sufficient resources to motivate the insertion of 'innovative routines' into organisational memory (promoting the initiators and participants of innovation projects, establishing successful patterns of action as standard procedures in internal guidelines, retraining employees). Such resources will be allocated if previously implemented innovations have proved their effectiveness. Therefore, we may formulate a stronger proposition — *innovation capabilities are developed when innovations play an important role in enhancing a firm's performance*. To test this hypothesis we used the available empirical data on innovation actions and innovation capabilities of Russian industrial companies.

Empirical Basis for Evaluating Innovation Activities and Capabilities of Russian Industrial Companies

We use the results of surveys among Russian top corporate executives conducted in late 2002 and late 2004 as an information base for evaluating innovation capabilities of Russian industrial companies. The composition of the questionnaires in the two years was almost identical.[5] In 2002 and 2004 we interviewed 1,141 and 1,727 general directors respectively. In both years the survey covered companies in all lines of business from most Russian regions. Respondents were asked to assess the difficulty of undertaking certain types of innovation activities on a scale of 1 to 3 (1 = not difficult, 2 = moderately difficult, 3 = extremely difficult). In addition, the respondents also evaluated changes that had occurred in their companies over the two years preceding the survey.

We cannot claim the populations of the surveys in 2002 and 2004 to be identical. To allow comparison, we selected companies in 10 industries (extractive industries, including oil; energy complex; metals; chemicals; pharmaceuticals; timber products; textiles; food-processing; electronics and machine building). There were 650 such companies in 2004 versus 482 in 2002.

For the purpose of certain comparisons we also used the results of surveys of industrial companies' directors that we conducted in late 1998 and late 2000 (735 and 742 persons respectively).[6]

The General Situation and Structure of Russian Industrial Innovation in 2000–2004

Before attempting to evaluate innovation capabilities, we should identify conditions under which they emerge as well as the popularity of particular innovation activities.

We begin our analysis with the assessment of the current economic situation and economic prospects presented by the CEOs surveyed in 1998–2004 (see Table 1).

Never before in the last eight years were the directors of Russian industrial companies as optimistic as they were at the end of 2004. The rise in the number of directors who viewed the position of their companies as 'good' (including 4% of the total respondents who considered their position in 2004 'excellent') is especially dramatic. The expectations of the companies' directors were also very positive. Moreover, the prevailing hopes for changes for the better were observed even in companies that were currently experiencing serious economic difficulties.

Let us examine what changes were associated with the dramatic improvement of company performance. The results of our surveys testify that profound transformations of almost all business practices have intensified over the past few years. We may observe a growing spread of change (the number of companies that have experienced some changes) and an increasing intensity of change (the proportion of Russian CEOs who indicated significant transformations of business practices) (see Table 2).

Analysing the correlation between changes in business practices, we found that the introduction of new types of products in the traditional sphere was accompanied by entry into a new sphere of activity in three cases out of 10 (correlation coefficient 0.341, sign. 0.000). Companies' entry into a new sphere of activity was partially based on the introduction of new technologies (correlation coefficient 0.277). Diversification also required mastering of new distribution channels (correlation coefficient 0.283, sign. 0.000) and changes in the established practices of personnel recruitment (correlation coefficient 0.178, sign. 0.000).

Our analysis of the intensity of changes by companies in different economic situations confirmed that *the better the current performance was, the higher the intensity of transformation in the previous years had been.* Statistically significant differences between groups of companies were observed for all types of innovations (see Table 3).

Over a third of enterprises that enjoy a good and, particularly, an excellent position had changed their product lines. This was accompanied by intensive changes in the internal structure of companies (establishment of new divisions), changes in business partners and introduction of new distribution forms and channels. Recalling that almost half of the companies surveyed were in a good or excellent situation (ranging from 35% in forestry to 54% in the food industry and 57% in the

Table 1. Companies' current economic situation and dynamics of development as estimated by their CEOs (% of respondents)

	Year of survey			
	1998	**2000**	**2002**	**2004**
Economic situation				
Bad (including 'close to bankruptcy')	43.2	16.2	22.2	6.8
Satisfactory	48.3	66.8	66.0	48.4
Good (including 'excellent')	8.7	17.0	10.9	44.8
Recent changes in the situation				
Significantly worsened	18.9	6.8	6.8	1.4
Somewhat worsened	36.4	10.5	27.7	13.9
No change	20.4	11.4	15.6	23.7
Somewhat improved	21.8	51.9	45.5	47.6
Significantly improved	2.5	19.4	10.5	13.4

Table 2. Main business and management changes implemented in 2000–04 (% of respondents)

Type of changes	Scale of changes	Year of survey	
		2002	2004
Introduction of new types of products in the existing sphere	*There were no changes*	*19.5*	*16.5*
	To a minimal degree	14.3	15.7
	To a certain degree	40.9	29.3
	To a significant degree	*25.4*	*38.5*
Production in a new sphere of business	*There were no changes*	*37.2*	*30.8*
	To a minimal degree	21.3	20.6
	To a certain degree	29.5	25.8
	To a significant degree	*11.9*	*22.9*
Introduction of new technologies	*There were no changes*	*17.9*	*13.2*
	To a minimal degree	25.0	22.0
	To a certain degree	43.3	35.2
	To a significant degree	*13.9*	*29.7*
Application of new financing methods	*There were no changes*	*27.8*	*19.8*
	To a minimal degree	27.8	32.2
	To a certain degree	33.9	33.5
	To a significant degree	*10.5*	*14.5*
Finding new Russian business partners	*There were no changes*	*16.2*	*10.6*
	To a minimal degree	20.4	22.4
	To a certain degree	47.7	41.3
	To a significant degree	*15.8*	*25.7*
Use of new distribution channels and forms	*There were no changes*	*18.0*	*13.0*
	To a minimal degree	32.8	26.9
	To a certain degree	38.9	36.2
	To a significant degree	*10.4*	*23.9*
Application of new methods of job evaluation	*There were no changes*	*26.7*	*25.2*
	To a minimal degree	36.2	32.9
	To a certain degree	28.4	26.1
	To a significant degree	*8.7*	*15.8*
Introduction of new remuneration systems	*There were no changes*	*10.9*	*13.2*
	To a minimal degree	27.8	29.7
	To a certain degree	42.7	34.0
	To a significant degree	*18.5*	*23.1*

pharmaceutical industry), the overall share of 'innovative companies' in our sample was thus around 25%.

Impact of Innovative Processes on the Dynamics of Companies' Development

The next stage of our analysis aimed to determine the impact of changes in business practices on the dynamics of the economic situation of the companies surveyed. The result was shocking: *practically no impact was observed.*[7] Both companies that significantly improved their economic position and companies that experienced deterioration of their situation described almost the same changes in their activities; all differences in the intensity of changes between groups of companies placed along the parameter 'dynamics of economic position' turned out to be statistically insignificant.[8]

As far as executives' *expectations* are concerned, they anticipate positive results only from entry into a new sphere of activity (correlation 0.134). In some areas intensive innovations are negatively related with expected performance. For example,

Table 3. Main changes in business and management in companies in different economic situations, 2002–04 (% of respondents)

Type of changes over recent years	Scale of changes	Current economic situation of company				Average for all companies	Significance of difference
		Bad	Satisfactory	Good	Excellent		
Introduction of new types of products in existing sphere	*There were no changes*	*31.7*	*16.3*	*13.7*	*20.0*	*16.5*	*0.040*
	To a minimal degree	17.1	17.3	14.5	12.0	15.8	
	To a certain degree	29.3	28.2	32.8	12.0	29.4	
	To a significant degree	*22.0*	*38.2*	*39.1*	*56.0*	*38.2*	
Production in a new sphere	*There were no changes*	*48.7*	*32.3*	*26.7*	*16.0*	*30.4*	0.036
	To a minimal degree	17.9	22.1	19.5	24.0	20.8	
	To a certain degree	17.9	24.8	27.9	36.0	26.0	
	To a significant degree	*15.4*	*20.7*	*25.9*	*24.0*	*22.7*	
Introduction of new technologies	*There were no changes*	*26.3*	*13.5*	*11.4*	*3.8*	*13.1*	*0.001*
	To a minimal degree	31.6	22.0	22.4	11.5	22.2	
	To a certain degree	26.3	36.1	35.3	34.6	35.2	
	To a significant degree	*15.8*	*28.4*	*31.0*	*50.0*	*29.5*	
Use of new financing methods	*There were no changes*	*36.8*	*19.4*	*18.7*	*8.0*	*19.7*	*0.000*
	To a minimal degree	39.5	38.1	25.6	24.0	32.3	
	To a certain degree	21.1	31.5	37.0	40.0	33.5	
	To a significant degree	2.6	*11.1*	*18.7*	*28.0*	*14.5*	
Finding new Russian partners	*There were no changes*	*17.5*	*11.5*	*8.5*	*4.0*	*10.3*	*0.000*
	To a minimal degree	27.5	27.5	15.8	16.0	22.3	
	To a certain degree	37.5	43.7	40.5	32.0	41.5	
	To a significant degree	*17.5*	*17.3*	*35.2*	*48.0*	*25.8*	
Use of new distribution forms and channels	*There were no changes*	*12.8*	*15.0*	*10.8*	*8.0*	*12.8*	0.000
	To a minimal degree	38.5	31.3	20.8	16.0	27.0	
	To a certain degree	41.0	35.0	37.6	36.0	36.4	
	To a significant degree	7.7	*18.7*	*30.8*	*40.0*	*23.8*	
Use of new forms and sources of personal recruitment	*There were no changes*	*42.1*	*24.0*	*18.8*	*28.0*	*23.1*	0.006
	To a minimal degree	34.2	43.9	35.5	20.0	38.9	
	To a certain degree	15.8	23.6	35.1	28.0	28.1	
	To a significant degree	*7.9*	*8.4*	*10.6*	*24.0*	*9.9*	

Use of new methods of performance appraisal	*There were no changes*	*39.5*	*24.8*	*23.0*	*26.9*	25.0	0.003
	To a minimal degree	36.8	39.8	24.2	30.8	33.1	
	To a certain degree	18.4	21.4	33.1	26.9	26.2	
	To a significant degree	*5.3*	*13.9*	*19.8*	*15.4*	*15.8*	
Introduction of new remuneration schemes	*There were no changes*	*30.8*	*11.6*	*11.9*	*15.4*	*13.2*	
	To a minimal degree	41.0	33.8	24.2	19.2	29.8	
	To a certain degree	17.9	32.8	37.7	38.5	34.0	
	To a significant degree	*10.3*	*21.9*	26.2	*26.9*	*23.0*	

the introduction of new technologies in recent years has a negative impact on executives' expectations concerning future economic dynamics.

Hence, the bright picture of an 'innovation heyday' that we painted begins to fade. Successful enterprises do indeed transform their business processes but Russian CEOs do not connect these changes with past or future successes. A logical question arises: what makes Russian companies launch the transformation of established routines if they do not expect immediate economic results from such transformation? This particularly concerns the riskiest type of changes, i.e. entry into a new sphere of activity (recall that this is happening at half of all companies surveyed).

To answer the question about the drivers of innovation activities we tried to clarify the structure of current objectives that CEOs face (see Table 4).

'To grow by any means' is the current imperative of Russian companies' development. To increase sales, Russian CEOs face the usual strategic dilemma — either to concentrate on costs or to focus on quality. However, for a great many Russian executives this not in fact a dilemma: almost 40% of the CEOs surveyed indicated that simultaneous improvement of quality and reduction of costs were their top priorities.

The combination of these two directions is theoretically achievable through radical innovation. Indeed, Russian companies undertake numerous attempts to modify their products (significant changes of product mix were made in 90% of the companies surveyed in metallurgy, 78% in machine building, 75% in the food industry, 75% in chemicals and 69% in textiles). At the same time, there is intensive penetration into new spheres of activity, where they have to master new distribution channels and find new sources of labour. However, as modification of products and diversification become the prevalent strategy in the majority of companies, they cannot automatically guarantee a gain in performance. This may explain why we were unable to find any statistically significant connections between particular innovations and the past and expected performance dynamics.

Innovation Efforts and Innovation Failures

Let us examine the difficulties that companies encounter when they have to change the existing business practices (see Table 5). Here we found that it was possible to make a clear-cut division of all innovation activities into four groups. The first group includes actions which were not simple in 2000–02 and remained difficult during recent years. These are:

Table 4. Key objectives of companies' executives, 2004

Objective	% of executives who identified this objective as 'very important'
Increasing sales volumes	71.8
Enhancing profitability	68.6
Stable financial position	64.9
Cost reduction	59.5
Quality improvement	57.3
Strengthening position in domestic market	56.7
Modernisation of production	44.7
Enhancement of company's value	31.1
Preserving jobs	30.0
High remuneration of employees	21.6
Entering foreign markets	19.9

Table 5. Difficulties of implementing certain types of activities as estimated by executives of Russian companies (% of respondents)

Type of activity	Relative difficulty of implementing the activity	In 2002	In 2004
Ensuring new project financing	Not difficult	6.0	5.0
	Moderately difficult	40.8	45.9
	Extremely difficult	*53.2*	*49.1*
Providing workforce	Not difficult	22.8	14.9
	Moderately difficult	51.7	45.7
	Extremely difficult	*25.5*	*39.4*
Achieving desired quality level	Not difficult	12.6	13.0
	Moderately difficult	69.2	53.3
	Extremely difficult	*18.2*	*33.7*
Changing range of executives' and specialists' responsibilities	Not difficult	61.3	34.6
	Moderately difficult	35.8	48.3
	Extremely difficult	*2.8*	*16.9*
Achieving coordination between operations of different departments	Not difficult	50.4	19.2
	Moderately difficult	46.8	53.8
	Extremely difficult	*2.8*	*27.0*
Ensuring control and accounting of expenditure for innovation activities	Not difficult	76.5	34.0
	Moderately difficult	22.0	53.8
	Extremely difficult	*1.4*	*12.3*
Identifying specifications of products desirable for consumers	Not difficult	46.4	32.4
	Moderately difficult	44.9	53.3
	Extremely difficult	*8.7*	*14.3*
Achieving required level of technological discipline	Not difficult	21.8	17.1
	Moderately difficult	69.7	59.1
	Extremely difficult	*8.5*	*23.8*
Ensuring adjustment of business partners	Not difficult	18.0	18.7
	Moderately difficult	53.1	49.8
	Extremely difficult	*29.0*	*31.5*
Establishing optimum level of sale prices for new products	Not difficult	41.4	9.1
	Moderately difficult	47.5	50.0
	Extremely difficult	*11.1*	*40.9*
Achieving mutual understanding with producers of similar products	Not difficult	19.6	20.0
	Moderately difficult	43.3	58.5
	Extremely difficult	*37.1*	*21.5*
Getting access to new technology	Not difficult	38.0	24.2
	Moderately difficult	45.9	54.1
	Extremely difficult	*16.1*	*21.5*

- ensuring new project financing (this was extremely difficult for half of companies in both 2002 and 2004); and
- ensuring adjustment of business partners (this was extremely difficult for 29% of companies in 2002 and represented a serious problem for 31.5% in 2004).

The second group includes actions that were moderately difficult in 2002 and that became more difficult by 2004. They include:

- securing a workforce possessing the necessary qualifications: 25.9% and 39.4% of companies considered this 'extremely difficult' in 2002 and 2004 respectively;
- ensuring the required quality level (18.2% and 33.7% respectively); and
- getting access to production technology (16.1% and 21.5% respectively).

The third group includes actions that were not perceived as difficult in 2002 but that evolved into a serious problem for the majority of companies by 2004. These are:

- establishing an optimal price level for new products (11.1% and 40.9%);
- achieving the required level of technological discipline (8.5% and 23.8%);
- achieving coordinated operations of different divisions within a company (2.8% and 27.0%).

Other aspects of innovation activities also became much more complicated.

The fourth group, which comprises types of activities the complexity of which diminished relatively is represented by a sole type of activity — 'achieving mutual understanding with producers of similar products'. Here, 21.5% of companies experienced 'extreme difficulty' in 2004 versus 37.1% in 2002.

We see that most companies experience a shortage of practically all types of innovation capabilities. This signifies that the inherited internal management structure of the majority of Russian industrial companies is inadequate for the new intensity of innovation management. This conclusion is also supported by the drastically aggravated pricing problems, which point to serious dissonance between marketing, technological and organisational capabilities.[9]

We should stress that innovation incapabilities do not depend on the size of a company. As far as industry-specific differences are concerned, external and organisational capabilities do not depend on the industrial affiliation of companies. Concerning other capabilities, we can see that absolutely different industries demonstrate similar characteristics. Thus, metallurgical, timber and textile companies experience similar difficulty in such actions as 'staffing', 'aligning operations of business partners' and 'maintaining the necessary quality level'.

Regarding the innovative capabilities of companies in different current situations, we observe that getting the financing for a new project and purchasing the necessary equipment depend directly on the current economic performance of the company — the better the performance is, the easier such actions are. However, these are the only items for which we found such a relationship. Most other innovative capabilities do not clearly coincide with the assessment of current performance. The most striking was the uniformity of the lack of qualified personnel — both companies 'on the verge of bankruptcy' and companies in an 'excellent situation' are struggling alike. Of course, we may speculate that such companies are hunting for different types of personnel, but the consequences of staff deficiency are similar — changes in job requirements, observance of new technological standards, orchestrated work of various departments are viewed as equally difficult by companies in 'bad' and 'excellent' situations (see Table 6).

Now we are approaching the key aspect of our analysis, i.e. identification of the interrelationship between actual practices and innovation capabilities. As we have seen (Table 3), companies in better economic shape are more enthusiastic for innovation. At the same time, they do not possess superior innovation capabilities. As a result, *the relationship between the intensity of innovations implemented and accumulated innovation capabilities is either negative or absent.* Thus, when intensity of changes in production mix rises, maintenance of technological discipline and coordination with business partners become more difficult (correlation of 0.123 and 0.124 respectively); the intensified introduction of new technologies makes it more difficult to maintain quality level (correlation 0.083). Most other interrelationships are statistically insignificant.

Thus, we can once again derive the conclusion that innovation activities of Russian companies largely represent involuntary actions that are not supported by internal capabilities. As soon as the scope of changes exceeds a certain critical (generally speaking, very low) level, the implementation of key innovation actions turns into a serious problem.

We may also stress that not only intangible resources (innovation capacities) but also tangible resources for innovation are scare. The low level of resources available for innovation is confirmed by the extremely low intensity of investment in the companies surveyed (see Table 7). Despite the growing satisfaction of Russian CEOs with the current performance of their companies, the proportion of companies which undertook no investment in recent years remained almost unchanged in 2002–04 (60% in 2002 and 59% in 2004). Less than a quarter of companies (22% in 2002 and 24% in 2004) made investments that covered or exceeded the rate of physical depreciation of fixed assets.

We should note here that any innovation, even innovations in 'subtle' aspects of management (staffing, performance appraisal), requires some initial costs. This is especially true for such capital-intensive business changes as mastering new products and diversification. Yet, although there are some statistically significant correlations between the level of investment and the intensity of innovation, the correlation coefficients are low (see Table 8). Such changes in business practices as 'diversification' and 'use of new distribution channels' show no relation to the level of investment.

We can see that the proportion of companies that consider the changes in business practices they implemented 'significant' (see Table 3) exceeds the share of companies that really made considerable investments. As a result, the real consequences of such 'significant' changes are doubtful.

Innovation Capabilities of Enterprises and Parenting Skills of Russian Corporations

Up to this point we have dealt with the companies surveyed as completely independent entities, masters of their own destiny. This is not true anymore for the main Russian industries (see Table 9). In total, almost one third of the executives surveyed admitted that their firm was part of a corporation; 'hard' corporations that interfere in the operational activities of their businesses are far more widespread than 'soft' entities that control only strategic issues. In comparison with 2002, we can also see the spectacular growth of 'informal' structures — business networks for coordinating strategic and operational issues of legally independent companies.

The distribution of different forms of control varies widely in different industries. Autonomous companies are rare in the raw materials and energy sectors: the number of such companies is less than one quarter of their total number. The metals and chemical industries also demonstrate a high degree of incorporation of companies into corporate structures. In a number of other industries, in particular in the textile industry, timber, and in the pharmaceutical industry autonomous firms form the majority.

We consider the ability to initiate and promote innovation in subsidiaries an important part of the 'parenting skills' of a corporation.[10] We compared companies with different levels of autonomy according to the intensity of their recently implemented innovations and accumulated innovation capacities. We found that

Table 6. Difficulties of implementing certain types of activities as estimated by executives of Russian companies (3-point scale), 2004

Type of activity	Assessment of current situation of company						Significance.
	Close to bankruptcy	Bad	Satisfactory	Good	Excellent	Total	
Ensuring new project financing	3.00	2.81	2.45	2.33	2.13	2.41	0.000
Getting access to new technology	1.50	1.91	1.98	1.95	1.67	1.95	0.215
Providing workforce	2.50	2.23	2.27	2.20	2.17	2.24	0.787
Changing range of executives' and specialists' responsibilities	2.00	1.94	1.80	1.79	2.04	1.82	0.393
Achieving coordination between operations of different departments	2.00	2.13	2.06	2.06	2.33	2.07	0.405
Transfer of workers	2.00	1.75	1.69	1.70	1.54	1.69	0.733
Ensuring control and accounting of expenditure for innovation activities	2.00	1.87	1.80	1.77	1.71	1.79	0.843
Identifying specifications of products desirable for consumers	2.00	1.94	1.79	1.88	1.71	1.83	0.439
Achieving desired quality level	1.50	2.44	2.21	2.19	2.00	2.20	0.061
Achieving required level of technological discipline	2.00	2.00	2.08	2.08	1.83	2.06	0.447
Ensuring adjustment of business partners	1.50	2.06	2.14	2.08	2.00	2.10	0.566
Establishing optimum level of sale prices for new products	2.00	2.47	2.31	2.33	2.21	2.32	0.499
Achieving mutual understanding with producers of similar products	2.50	1.94	2.03	1.98	1.96	2.00	0.639

Note: Difficulties were assessed on a 3-point scale: 1 = not difficult at all; 2 = moderately difficult; 3 = extremely difficult.

autonomous companies were more inclined towards product innovations, in both the existing and new spheres of activity. In such spheres of innovation as introduction of new production technologies, new financial instruments and new forms and methods of human resource management, we did not observe any statistically significant differences between types of companies.

Regarding innovation capabilities, there were no statistically significant differences between the four identified groups of companies (with two serious exceptions). The newly established bureaucratic procedures in Russian corporations make it more difficult to relocate personnel between departments and to gain access to necessary technology. Thus, at the present moment, Russian corporations in general lack the 'parenting skills' to enhance the innovation capacities of their subsidiaries.

Our 'final hope' was the expectation that foreign subsidiaries would be superior to Russian-owned companies in innovation capacities. We found that this hope was not fulfilled. Companies in completely Russian ownership, joint ventures and subsidiaries of foreign companies all exhibited similar innovation capacities. The only area where foreign subsidiaries have a clear superiority over local companies is in 'maintaining standards of quality'. In all other aspects of innovation the differences were statistically insignificant.

Discussion

The economic recovery in Russia turned out to be a race for growth for local industrial companies. This target is attacked at the same time from two sides — the improvement of quality and the reduction of production costs. In pursuing these two tasks

Table 7. Investment activities of Russian industrial companies (% of companies in particular industry)

Industry	Cumulative investment in past two years as proportion of company's fixed assets					Year of survey
	Zero	Less than 5%	5–10%	10–20%	More than 20%	
Raw materials	24	5	24	16	29	2002
	26	11	26	18	18	2004
Electricity	26	48	4	11	11	2002
	42	25	18	9	5	2004
Timber	20	33	7	13	27	2002
	38	21	17	12	12	2004
Chemicals	30	36	31	3	9	2002
	31	20	29	16	16	2004
Metals	10	48	19	9	14	2002
	27	27	27	7	13	2004
Machine building	34	32	22	6	6	2002
	37	28	10	14	10	2004
Electronics	15	46	11	8	19	2002
	40	19	19	16	7	2004
Food processing	27	11	23	11	27	2002
	31	12	16	21	11	2004
Textiles	30	40	20	0	10	2002
	36	36	9	7	12	2004
Total	*27*	*33*	*18*	*8*	*14*	*2002*
	35	*24*	*17*	*13*	*11*	*2004*

simultaneously Russian industrial companies embark on endless experiments by launching modified products, redesigning business networks and rebuilding internal management systems. More successful companies undertake deeper transformations of their business systems; less successful companies remain more inert. At the same time, the majority of Russian CEOs do not attribute their past successes to particular innovations and do not generally relate their performance expectations to on-going innovation projects. This is partly explained by the fact that all Russian companies, irrespective of their size, industry or current performance dynamics, experience similar problems in key aspects of innovation management — staffing, internal coordination and pricing for new products. All these problems have become much more serious over the past few years.

We may distinguish two major colours in this picture. The 'bright' colour is the mass innovation attempts by Russian enterprises. Although we have no comparable data about innovation capabilities of enterprises in other economies, we believe that difficulties Russian CEOs reported in implementation of innovation projects are similar to the problems any CEO faces in developed economies. In this respect, we may speculate that the Russian economy has indeed reached 'the end of transition' and the beginning of its transformation. Two additional reasons confirm our speculation. On one hand, the growing difficulties in new product pricing signify the maturing of the relevant markets for Russian companies. On the other hand, the severe shortage of 'qualified workforce' indicates that Russian managers have established new productivity and behaviour standards for themselves and their subordinates.

The dark colour in the picture is the neutrality of innovation with respect to overall economic performance and even to partial parameters of competitiveness (quality and cost levels).[11] This means that innovation efforts presently lack 'positive reinforcement'. In the absence of positive reinforcement, innovation actions have no chance to become embedded in the organisational memory of a company in the form of innovation routines, i.e. stable algorithms of actions. Every new project starts from scratch, experiencing the same difficulties. This was indeed observed in the form of absent or negative correlations between intensity of innovative actions and innovation capabilities of Russian companies.

We should stress that this problem of 'mass organisational sclerosis' cannot be healed by ritual dances of OD practitioners or by traditional medications of other

Table 8. Correlation between intensity of innovation and intensity of investment

Innovation	**Level of investment**
Introduction of new types of products in existing sphere	0.085(*)
Production in a new sphere	0.070
Introduction of new technologies	0.191(**)
Use of new methods for quality control	0.095(*)
Use of new financing methods	0.089(*)
Finding new Russian partners	0.033
Use of new distribution forms and channels	0.030
Use of new forms and sources of personnel recruitment	0.053
Use of new methods of performance appraisal	0.076
Introduction of new remuneration schemes	0.061

Note: *Correlation is significant at the 0.05 level (2-tailed); **correlation is significant at the 0.01 level (2-tailed).

Table 9. Distribution of companies surveyed by perceived independence in decision making (%)

Level of company's autonomy	2002	2004
Our firm enjoys full autonomy in decision making	50.9	46.8
Our firm is a member of an informal group in which participants coordinate certain activities	9.6	19.7
Our firm is part of a structure that determines prospective development	8.2	10.5
Our firm is part of a structure that determines prospective development and current activities	23.2	20.3
Other	4.4	1.6
Difficult to answer	3.8	1.7

professionals and amateurs of organisational learning. The issue is much more serious. We must understand why (contrary to all theories) innovations do not seriously affect competitiveness.

Two possible explanations may be plausible. One is Russian CEOs' understanding of competitiveness. Here we should confess that the data on key objectives of company executives presented in Table 4 were misleading. In that table we reported only cases where respondents assessed the particular goal to be 'extremely important'. If we take into account also cases where particular goals were stressed as merely 'important', we find a situation where 85% of CEOs strive for quality improvement, 84% of CEOs attempt to decrease costs and 73.5% of companies pursue these two goals simultaneously. Such attitudes do indeed create incentives to innovate, but superior quality with low costs is rarely achieved, either by radical innovation or over a long period of Kaizen-style improvements. Both situations are exceptional in Russian industries as they require either massive or prolonged investment—usually both intensive and prolonged. However, we have seen (Table 8) that many innovations are implemented with little or no investment. Here we derive the second explanation for the feeble impact of innovation on competitiveness. Innovations identified by CEOs are in many cases just 'good intentions', or merely sporadic actions, implemented without adequate means. Consequently the innovations implemented may indeed bring some tangible results, but such results almost never meet the initial expectations of CEOs who are attempting to derive a 'magic cure' out of standard ingredients that often are taken in homeopathic doses.

Conclusions

The repetition of our survey cast more light on specific aspects of innovation processes in Russian industries. Under generally positive economic conditions most Russian enterprises are intensifying their innovation efforts. They are implementing deeper changes and such changes embrace both business and management practices. At the same time, inadequate investment makes innovation actions insufficient to bring about positive changes in companies' competitiveness or merely to become embedded in organisational memory as 'successful routines'. As a result, the innovation capabilities of Russian firms remain low. The large corporations that nowadays control most large Russian industrial companies have little impact on the innovation practices of their

subsidiaries. Newly born Russian corporations lack parenting skills to stimulate and orchestrate innovation at the business level. The aggravated shortage of qualified personnel adds to the picture.

Are the widespread intentions to innovate likely to be transformed into more focused and 'full-blooded' innovations with tangible results for competitiveness? The answer depends on three 'ifs'. First, Russian CEOs must shift from their current prevalent attempts at Chairman Mao-style 'great leap forward' total competitiveness improvement to more modest Porter-style generic strategies. At least, they should realise that improvement of quality and reduction of costs are usually incompatible tasks. Second, new routines of organisational learning should be established in Russian companies. At least, new appropriate forms to promote and encourage innovators must be found. Both conditions depend on the third one — development of infrastructure that makes investment affordable to the majority of companies. Presently, as we look into the possible sources for investment (depreciation funds, accumulation of retained earnings, long-term bank loans, internal corporate transfers to subsidiaries, venture capital, state grants), none of them can really serve as a secure source to finance innovation projects.

- Depreciation funds are empty as the book value of assets is minimal (in 40% of the companies surveyed the major technological equipment is more than 15 years old, and in machine building almost 60%).
- Long-term bank loans, for average lenders, must be secured by mortgaging assets.
- Earnings are taken away by shareholders that are eager to invest in the prospering Russian energy sector.
- Internal corporate transfers represent a zero-sum game within a national economy — to invest in one subsidiary the headquarters of a corporation has to squeeze another subsidiary.
- Numerous attempts to promote venture capitalists or state grants undertaken over the past 12 years mostly ended either in corruption or in government funds. The most recent campaign of 'national projects' has noble goals, but does not create a new infrastructure for investment and does nothing to make access to state coffers easier for innovative projects in depressed industries.

In view of the above considerations, further accumulation of innovation 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 limted by the inability of their local partners to adapt to new requirements. Locally-oriented companies with sufficient financing for innovation will be inclined towards ready-made solutions implemented by turn-key operators. In both cases breakthrough innovations in production and management technologies will be rare and will not determine the overall picture. In this respect, the sustainability of Russian economic development is not secured.

Notes

1. The Russian government has already stressed the importance of the *quality* of local oil for the future prospects of the oil sector.
2. B. Lawson & D. Samson, 'Developing Innovation Capability in Organizations: A Dynamic Capabilities Approach', *International Journal of Innovation Management*, 5, 3 2001, p. 384.

3. The innovation literature usually distinguishes the novelty of an idea (new for the firm, new for the sector, new for the country, new for the world) (see for example H. Hollenstein, 'A Composite Indicator of a Firm's Innovativeness. An Empirical Analysis Based on Survey Data for Swiss Manufacturing', *Research Policy*, 25, 6, 1996, pp. 633–645). However, from a managerial point of view, the absolute or ever relative novelty of an idea usually is of minor importance. What is of major importance here is to have the courage to *accept* the idea.
4. The level of post-sale services and the intensity of promotion are important components of the total quality of the product (good or service).
5. The English version of the questionnaires was presented as Appendix 1 in I. Gurkov, 'Innovations in Russian Industries: Conditions for Implementation and Impact on Competitiveness', *Journal for East European Management Studies*, 10, 3, 2005.
6. I. Gurkov, 'Business Innovation in Russian Industry', *Post-Communist Economies*, 16, 4, 2004, pp. 423–438.
7. We used regression analysis by taking changes in the economic position of companies as a dependent variable and intensity of changes in individual practices as independent variables. The quality of the regression equation generated turned out to be quite low (Adj. $R^2 = 0.052$).
8. With the exception of companies that experienced a drastic worsening of their economic position over recent years, none of which had entered a new sphere of activity and in which introduction of new products in the existing sphere of activity was minimal. However, these enterprises account for just 1% of the total number of companies surveyed.
9. For the concept of strategic resonance see S. Brown & F. Fei, 'Strategic Resonance between Technological and Organizational Capabilities in the Innovation Process within Firms', *Technovation*, 26, 2006; also S. Brown, *Manufacturing the Future—Strategic Resonance for Enlightened Manufacturing* (London, Financial Times/Pearson Books, 2000).
10. For the concept of 'parenting skills' see M. Goold, & K S. Luchs (eds), *Managing the Multibusiness Company. Strategic Issues for Diversified Groups* (London, Routledge, 1996). The detailed data on differences in innovation capabilities between autonomous companies and subsidiaries of Russian corporations are presented in I. Gurkov, 'Vozdeistvie integrirovannykh struktur upravleniya na innovatsionnoe razvitie rossiiskikh predpriyatii: popytka empiricheskogo analiza'. *Rossiiskii zhurnal menedzhmenta*, 3, 4, 2005, pp. 55–66.
11. Here we again applied regression analysis taking individual parameters of a company's competitiveness (level of prices, quality level, cost level) as a dependent variable and intensity of changes in individual practices as independent variables. Once again, the quality of the regression equations generated turned out to be very low (Adj. R^2 ranging from 0.031 to 0.086 for individual parameters of competitiveness).