

**Research Article****Innovative Collaboration Ensures Industrial Success**

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**ABSTRACT**

The paper considers collaboration forms that are able to influence positively economic potential and stability of an organization in the market, i.e. first and foremost, avoid negative impact of bigger companies on their business. It is a common knowledge currently that collaboration has always been a constructive characteristic of any organization. However, it becomes more and more ubiquitous, and practically expands into new forms and areas with new relations. *Co-competition* as a current reserve at any enterprisemay grow into effective tool to support a specific industry or industrial territory in conducting innovative events. Innovative forms of collaboration between industrial organizations have become buzz-words so urgent in connection with their significance for the organizations trying really hard to improve competitiveness of their products and with that purpose using innovative energy and resource saving technologies, which in turn help them decrease dramatically their wastes. The study was made on the bases of a modelling technique as the leading method that is able to assist in examining the issue in the frames of a well-directed and managed process aimed at improving the integral aspects of the qualitymanagement systems of industrial enterprises. The authors propose their arguments and recommendations concerning viability of innovations in industry collaboration. The study of the research outcomes makes it possible for differentorganizations in various industriesto arrange better regulation of their innovative activity, as well as be a part of their industry corporate programs, and may be of certain interest to the state statistics bodies and departments responsible for strategic analysis and planning.

**Keywords:** organization, innovation, collaboration, competitiveness, management.

**INTRODUCTION**

Industrial development has an important role in the economic growth of country, that is why the researcher consider the issues related to consolidation of production, strengthening market power and efficiency scale, limitations in the form of weakening incentives for innovation mostly due to some failures of market

mechanisms as a result of reducing the competition intensity caused by new challenging trends of market's monopolization. Despite the fact that at the federal level the model of industrial innovative development is closely associated with state corporations, still co-financing tools for megaprojects are very

popular, and attempts to form special areas covering small innovative enterprises working at universities are made, though what is disappointing here is that their effectiveness has not been yet proven. The scale of their performance also didn't prove to be sufficient for developing small and average innovative business sectors, and, of course, their outcomes cannot be compared to those of huge organizations. Therefore, Russian theory and practice of managing industrial innovative development still faces stiff headwinds, on the one hand, due to insufficient innovative activities at big companies; on the other hand, due to insufficiency of small business resources to carry out successful R & D sector development and use its outcomes profitably to sign contracts and place orders in big plants and factories. In this regard, the works of some researchers have been of great interest and attention (Brandenburger&Nalebuff, 1996; Moore, 1996; Williamson, 1985; Silverberg &Verspagen, 1995; Shinkevich&Lubnina, 2011).

It is a common knowledge currently that organizational forms of competition which are able to improve economic strength of the enterprise in the market and help avoid negative impact of a big company market power are of great interest and significance. One of them may be, in our opinion, *co-competition*. We believe it to be a true reserve in the forms and techniques of innovative development in industries and territorial areas.

In addition, modern economy has such significant feature as huge expenditures of energy, capital and labor to support the appropriate competitive potential of industry. Therefore, it has become urgent to increase production pace and scale on the bases of limited natural resources quantity that is available for industries. This approach is rather dangerous for the reliability of industrial production. Moreover, it can also make it impossible in future to meet the needs in natural resources. These aspects have been discussed in the papers by a number of Russian researchers (Shinkevich et al., 2015a; Shinkevich et al., 2015b; Reznikov et al., 2015; Malysheva et al.,

2016; Kudryavtseva et al., 2015; Zaraychenko et al., 2016).

## RESULTS AND DISCUSSIONS

### The economic identity of co-competition models

The study of the essence of the *competition* term proved that organizations striving for competitive benefits through innovations have better production and sales conditions of their goods. This plays a crucial role when speaking of their position in the market, i.e. they always have better positions. However, an organization that works for long-term success has to think not only about competition goals but understand the idea of cooperation as a new form in the life of organization. In this respect A. Brandenburger& B. Nalebuff (1996) used a new term *co-opetition* (co-competition) to determine simultaneous relationship of cooperation, collaboration and competition of industrial enterprises at various stages of production and individual business processes. It occurs at inter-organizational or intra-organizational levels, its importance was emphasized for small and medium-sized enterprises. As technologies become more complex, these enterprises start facing numerous challenges such as rising R&D costs, high risk and uncertainty in technological development, and lack of resources to pursue large-scale innovation projects. The problems may be solved effectively if they work together by combining their own resources and expertise to develop their collective ability so that they can compete effectively with large companies. Cross-functional co-competition is conceptualized with distinct and independent constructs related to cross-functional cooperation (task orientation, communication, interpersonal relationships), and associated with cross-functional competition (tangible resources and intangible resources). Co-application of knowledge about innovation process stages, life cycle of industries, the theory of the added value in the supply chain made it possible to distinguish the following types of co-competition:

— direct co-competition - relationships between enterprises that persistently consolidate their economic (financial, human, technological, organizational, etc.) resources with intent to improve their efficiency gains due to collaborative development and innovative events. The estimated results of the jointly implemented project will bring to innovative procedure and production enhancements;

— indirect co-competition occurs when companies independently generate demand for certain innovations; thereby, they contribute to the sector of the economy they depend on and are interested in. The joint project results in development of innovation infrastructure in the industry sector that are able to support the innovatively active organizations supplying them necessary resources.

Essentially, the models together with high-tech infrastructure sector are able to create incentives within the industry for successful innovative development of organizations. The infrastructure is meant to be organized in the form of various innovation development centers (e.g., in industrial districts, techno poles). The point is that special industrial institutions are being created at the sector level, in which there is competition between manufacturers of innovative technologies and products according to market demands in the field. An economic incentive for innovation development, in this case, is the compensation of transaction expenses in the framework of institution created (the mechanisms of state compensation or collaboration on the pre-competitive stage), which increases the relative expenses of transactions for the monopolies. Consequently, industry-basic enterprises feel it more profitable to carry out research and development activities placing contracts that help them to perform well in their core competencies, improve performance and achieve the service needed. Economic growth requires change (outsourcing) and competition between small innovative enterprises. The organizations adapt to the changing environment that facilitates growth and a stable work via these new economic institutions, or structures.

Considering the proposed approach it is necessary to reveal the economic content of models and characterize their institutional and management structures.

In order to increase efficiency of the enterprise and decrease expenditures some competing companies within the industry jointly invest in the development of innovations. This is the so-called model of *direct* co-competition. Institutional and management structures and bases for innovation development in this model may be in the form of industry-specific research and development institutes, scientific and technological centers, higher education institutions (within the scientific research), design offices, etc. The result of co-competition is an innovative product (production technology, organizational, marketing innovations; improvement of consumer properties of the product) which is used by enterprises which co-financed this product manufacturing and became its owners.

Currently, the *direct* co-competition between enterprises on the territory of the Russian Federation is not a widespread thing. However, market actors in economically developed countries are increasingly using this model of collaboration. In respect to all discussed above two subtypes of *direct* co-competition have been proposed depending on the phase when the added value has been generated in the industrial supply chain: technological and market.

In the case of technological (process) co-competition its object is the collaboration of enterprises in the phase of technology development for the supply chain and the subsequent competition in the phase of market development of innovations. The effectiveness of this model of innovation development is that the developed innovative product is created at the beginning of the supply chain; it passes through its entire links, thereby increasing the beneficial effect on each stage. This means that innovations have greater multiplier effect for regional economic system in comparison with the market co-competition.

The second type of model of direct co-competition is market (food products) co-competition takes place when organizations

collaborate in the final phases of product manufacturing and sales. . The result of this model of co-competition can be marketing and organizational innovations. Marketing and organizational innovations are outcomes for this co-competition model.

Characterizing the second model of co-competition, it is good to mention that the indirect (Infrastructure) co-competition is a demand for manufacturing an innovative product from competing companies, and this connection between demand and innovation is fundamental. Enterprises independently make a demand for the development of innovation, thus influencing appropriate market sector on a particular territory. The mechanism of this model is closely connected with the development of a new activity or event in the area where, for example, in accordance with the targeted investment programs, major industrial projects are implemented, and they require employees with new competencies, new services, etc. Therefore, the proposed set of co-competition models suggests the universal management technologies good for all states of industrial conditions.

#### **Study of enterprises' experience of innovation activity stimulation of in the Republic of Tatarstan**

Considering co-competition of industrial enterprises the authors have studied the effectiveness of enterprises known for their innovative activity. In 2010-2015 they were 100 enterprises, representing the manufacturing sector of the Republic of Tatarstan, 33% of which were large, 33% were average size and 33% were representatives of small business.

The starting point of the study is the fact that co-competition should be looked upon as the phenomenon having problem areas associated with the use of manufacturing factors. In accordance with the theory of manufacturing factors it is possible to consider the following co-competition types in the spheres of increasing production factor effectiveness: co-competition to use more effectively labor resources; co-competition to use more efficient technology; co-competition to act more effectively at the market.

To improve the competitive environment it is a good idea to divide all organization performance indicators into 3 groups that characterize the efficiency of manufacturing factor use: labor resource performance indicators (enterprise profit per employee, labor productivity, the average salary of an employee, the share of labor costs in value added, the value added ratio and wages), indicators of technology use effectiveness (cost effectiveness, profitability of the enterprise), performance indicators of market activity (the share of shipped innovative products in the manufacturing process, goods and services, production efficiency).

Analysis of enterprises in 2010-2015 showed that, of course, industrial production is a dynamic activity, but develops in conditions of increasing physical deterioration and normal obsolescence of fixed assets. The consequence of long-term operation of equipment is not only its physical deterioration that is fraught with the threat of man-made disasters because the plants carry a large fire and environmental hazard and only high production and highly qualified staff saves the situation, but obsolescence affects the competitiveness of industrial products both in foreign and internal markets. As a result, imported products previously held in the category of export appear in the internal market. It would be logical to assume that with such a strong depreciation of fixed assets, industrial enterprises are making significant efforts to update them. This fact is shown by our analysis of enterprises. Moreover, the analysis of the enterprises engaged in industrial production showed that the most efficient use of fixed assets was observed in medium-sized enterprises. For small and large enterprises efficient use of fixed assets is lower. The strategy for these companies, in our opinion, should be a policy aimed at scientific and technological improvement of production processes, branching, the raw material base, facilities and infrastructure, development within the industry innovative products (polymers), as well as a stimulating effect on consumers by products produced.

Along with this, there is a threat of decreasing of innovative activity in these organizations

caused by increase of raw material cost and energy source expenditures. This is a significant reason to make organizations focus more on the issues of cost control strategies, which involve development of raw material base, as well as more efficient use of raw materials and energy. The latter reduction mentioned is connected with implementation of a state program of energy saving, while the first requires enhancement in state regulation of the process that involves standardizing performance, competition when choosing suppliers (this function is transferred to the representatives of state bodies in joint stock companies), and increasing productivity of employees in the organizations.

In this case, the development of the industry should take the path of forming special institutional structures, the main motive for the existence of which is transaction costs reduction of the innovative process for an organization, and this is of special significance for small-sized companies.

In general, fairly high values of efficient manpower indicators have been already observed. This is due to introduction of high-tech technologies, computerization, i.e. increase of technical infrastructure in organizations. Moreover, relatively high salaries in these organizations are great incentives that motivate employees to better execution their job duties.

Identifying challenges facing the manufacturing sector and suggesting the main directions in the work to improve the effectiveness of organization strategies it is possible to draw a brief summary highlighting organizations and sectors where co-competition is more reasonable and suitable.

The highest values of manpower performance indicators in 2015 were observed in large companies, as evidenced by the high values of business profits per employee (994.3 thousand Rubles), the average salary per month (37518.3 rubles per employee ), high performance values (1764.8 thousand rubles), and so forth. In this case, it is better to choose small and medium-sized companies as the objects of co-competition because of their relatively low manpower performance.

2015 saw the highest share of innovations in the production of products, goods and services in medium-sized companies (29.1%) ever, as well as high production performance indicators (37.6%). This fact allows us to make a conclusion that companies in this sector are more effective in their market activities. Market activities of large and small industrial companies are less effective. One of the techniques to increase it is implementation of co-competition policy in small and large companies in the industry. Effectiveness of new technology introduction is highest in large companies, the profitability of these enterprises made up 45.7% and their cost-effectiveness value 0.4. These values are lower in small and medium-sized companies of the same sector which proves that consumption of circulating capital was not total. To improve the efficiency of its use co-competition with small and medium-sized companies has been proposed.

#### **Proposals for successful introduction of innovative forms of collaboration in the Republic of Tatarstan**

In small and medium-sized companies there is a deficiency of engineering staff level due to their work on the worn-out equipment and outdated techniques, as well as inconsiderable investments into the employees' skills development. into the industrial sector of the Republic of Tatarstan. For better employment of human resources in small and medium-sized companies it is reasonable to use the model of *indirect* co-competition that will enable implementation an effective personnel policy aimed at increasing of the intellectual potential of the companies in the sector corresponding to the goals of innovative development. For small and medium-sized companies it is expedient to participate in creation of corporate universities, as well as organize training on the basis of specialized universities using techniques of project training for operational use new knowledge and skills in practical work.

Moreover, for a balanced innovative development of such a complex it is necessary also to put incentives for better technological and indirect co-competition of small and large companies in the industry sector associated with

renewal of their fixed assets, and the range of products due to introduction of advanced high-tech, resource- and environment-saving technologies that are competitive in the global and domestic markets.

In *technological* co-competition of large enterprises it is expedient to involve small businesses for generating and effective development of scientific and technological innovations. The current situation demonstrates that there is the need for ramification in collaboration process for small and large businesses with the aim of increasing innovation and intellectual potential of small businesses, enhancing its role and importance in the development both of industrial sector and small business companies in the Republic of Tatarstan. Implementation of the concept of *indirect* co-competition within the framework of small innovative business policy allows equate its positions with the position of sector-forming companies, i.e. we are talking about a duopoly in developing and implementing technological innovations. On the one hand, the initiator of a development is a major, and in some cases a sector-forming company in the region, on the other hand, it may be an institution that brings together small manufacturers of innovative products. Still, implementation of the model of institutional transformations will require further development of the industry business activity which may become a serious institutional constraint, as well as alignment of the game rules within the industry preventing monopolization of the institution created by a large company.

It is reasonable that large and small companies within the framework of *indirect* co-competition collaborate and this collaboration has the following aims:

- greening in the industry development;
- transition to resource-saving policy;
- implementation of industrial goals in the Republic of Tatarstan related to expansion of advanced resource-saving materials production, initiating processes of resource-saving in other sectors of the economy;

- comprehensive collaboration of companies in the region, particularly military-industrial ones, machine building, construction, agriculture, food industry, etc.;
- joint large-scale investments and innovative projects;
- improving of control system of the whole complex, increasing the degree of centralized coordination of its development;
- further structural and institutional changes aimed at creating optimal structural proportions in the complex, taking into account the reforms.

In small and medium-sized companies of the industry, the model of *market* co-competition will allow to increase the scope of market activity. Reserve for development of these enterprises is, on the one hand, closely connected with their work with suppliers of resources, so-called retraction of logistics both used with the resource providers and consumers of products. A significant reserve of increase in the added value for this sort of manufacturers is to optimize their distribution function aimed at developing of its own sales network (which would require a fairly significant capital investment). It is also advisable for these companies, in our opinion, to initiate their own product innovation introductions in the framework of a marketing policy.

However, isolated (local) implementation of co-competition models cannot ensure a continuous success, will not solve the problem of innovative development as a whole. That is why integrated implementation of the proposed models makes economic sense. Testing of theoretical proposals to justify a co-competition model, its strategies arrangement to be used in practice of industrial sector functioning, and other economic activities, indicate that they are reasonable, reliable, credible, and allow clarifying of the institutional and economic mechanisms of an industry sector innovative development.

## CONCLUSION

Investigations into the models of innovative development of countries, regions and certain companies have been considered in a number of

significant fundamental and applied research works (Lazonick, 2006; Silverberg & Verspagen; 1995; Shinkevich et al., 2016; Galimulina et al., 2016; Kudryavtseva et al., 2016). Some of them are based on the theory of neo-institutional theory (Nelson & Winter, 1982; Shinkevich, 2005; Williamson, 1985). Relatively small is the number of publications devoted to the study of forms of competition and collaboration in the sector of research and development departments and organizations (Brandenburger & Nalebuff, 1996; Moore, 1996; Shinkevich & Lubnina, 2011).

The economic content of *co-competition* category has been clarified. It is proposed to consider it as implementation of innovative projects on the basis of the competitors' innovative production incentives (commercial manufacturing contract) to manufacture an innovative product with different phases of the innovative product's life cycle. The classification of co-competition types adequate to various sorts of innovative projects has been proposed. A set of recommendations on the appropriate co-competition forms and their choice have been derived and scientifically validated.

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