

The Dynamics of Innovation Development for Enterprises of the Republic of Tatarstan in the Conditions of Supply Chain Management and Digital Economy

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Abstract- The strategic aim of the Russian economic progress is about transition to innovative development model by considering the digital economy and supply chain management. The main tasks of country government in program decisions are: organization of national innovative system and creating its infrastructure which provides technological modernization of economics, increasing of competitiveness based on hi-tech, transforming scientific potential into one of the main sources of sustained economic growth. The article presents an analysis of innovative activity dynamics in enterprises of the Republic of Tatarstan. The innovative activity of enterprises in the Republic was analyzed; indicators of shipped innovative products were viewed. The characteristics were given according to main indicators of transfer and commercialization of innovative technologies. The results of innovative activity in enterprises at the regional level were summarized.

Key words- supply chain management, innovative activity, manufacture of products using nanotechnology, transfer of innovative technologies, commercialization of innovations, technology import and export.

1. Introduction

In the current context, more attention is given to innovative performance of individual economic agents in regions of Russia. Innovative potential of the region is a complex of evident sources and hidden opportunities. Furthermore, there are conditions influencing activity of economic entity and forming readiness, necessity, possibility and ability to successful innovative performance. The Republic of Tatarstan takes the 5th place among regions of Russia with the highest potential. At the regional level, innovative activity revitalization is the strategic goal of economic development in the Republic of Tatarstan. The innovation management demands knowledge of patterns, problems and specificities of innovation. The development strategy of Volga Federal region till 2020 includes necessity of increasing the role of innovation in socio-economic development of the region as one of

the mechanisms for achieving strategic goals. In this regard, it seems relevant to consider the innovative development strategy and activity of the region with the aim of disclosing the major problems of innovative development of the region, its opportunities and advantages on the example of the Republic of Tatarstan.

2. Methods

The analysis of the innovative activity indicators is necessary for ensuring coordinated operations of the innovation actors, enhancing the effectiveness of state regulation of the innovative area in the region and achieving its main guidelines. The analysis of the Republic of Tatarstan was performed according to the Federal Service of the region for the last ten years. Methods of research were comparative figures of innovation activity in the Republic. Assessment of the dynamics of business innovation in the Republic for ten years shows that the number of enterprises active in innovation is characterized by an annual increase in the period from 2007 to 2017 [1, 2]. The level of innovational activity of enterprises in the Republic has grown from 14.1% in 2006 up to 22.2% in 2017. In 2017, 167 organizations, or 22.2% of all surveyed enterprises and organizations, were involved in innovation activities in the Republic of Tatarstan. Innovative processes in the Republic are mostly found in industrial enterprises, they consist 76% of all innovation-active organizations. Currently, an important role in the intensification of innovation processes belongs to small businesses. In 2017, the number of small enterprises engaged in innovative activity was 43 units (in 2015 - 33 units, in 2009 - 28 units, in 2011 - 39, in 2013 - 36) [3, 4]. The contribution of innovations and new technologies to the development of the Republic's economy is constantly increasing. Innovations and new technologies provide not only the growth of Gross Regional Product (GRP), but also its qualitative,

progressive change and competitiveness of the Republic's economy. In 2017, value-added share of innovative products in the gross regional product of

the Republic of Tatarstan is 20.6%. This figure increased by 5.1 percentage points compared with 2007, Fig.1.

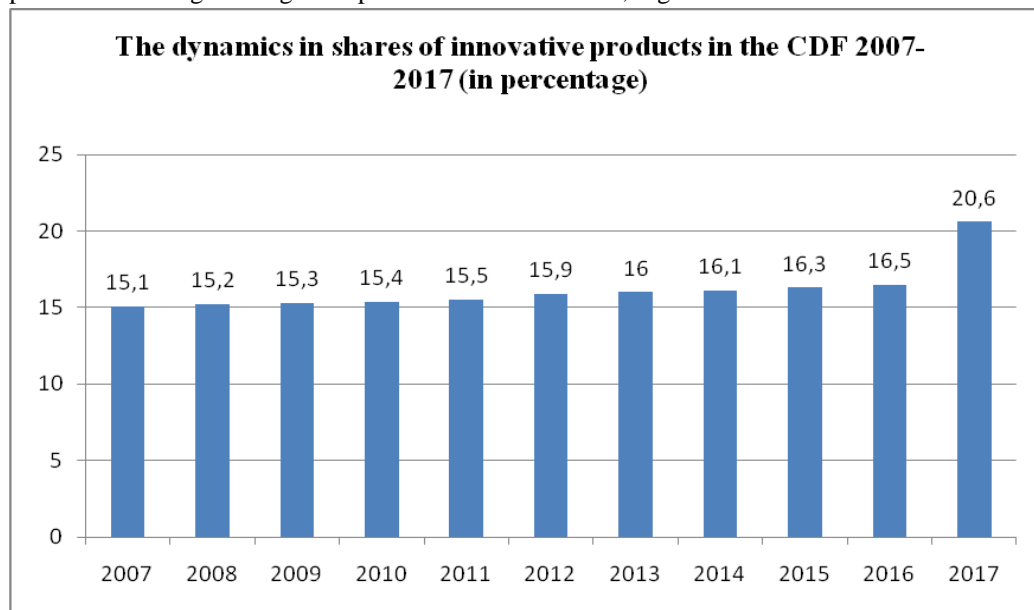


Figure 1. The dynamics of the share of innovative products in the CDF of the Republic of Tatarstan

The final result of innovative activity is the introduction of more efficient technologies, materials, supplies, the development and improvement of products. In the Republic the enterprises and organizations were implemented innovative goods, operations and services in the amount of 43557,7 million rubles in 2017. Over the past five years, this

indicator has grown in 1.5 times. The share of innovative products, work, services in the total volume of factory shipments of the Republic of Tatarstan is 19,6%. According to 2013, the maximum indicator for the shipped innovative products, work and services in the total volume of shipped products in the Republic is 21,1%, fig.2.

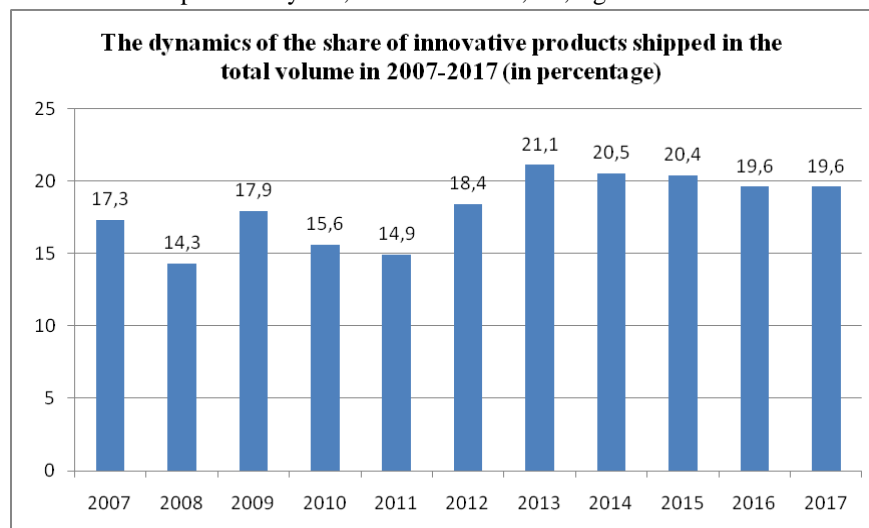


Figure 2. The dynamics of the share of shipped innovative products in the total volume

Industrial enterprises sold innovative goods and provided work and services in the amount of 43557,7 million rubles, or it is 68,9% of the total volume of shipped products of the surveyed organizations. In 2017, the service organizations shipped innovative services in the amount of 9033,3 million rubles, or 1,2% of the total volume of products shipped to the

organizations surveyed. [3] In 2017 the volume of shipped nano industrial products in terms of goods and services amounted to 285451,7 million rubles, or 29,3% of the total volume of factory shipments of innovative enterprises (in 2015, 39009,9 million rubles, or 10,5%)[5].

Table 2.The volume of innovative goods, work and services shipped

	Millions of rubles		As a percentage(%) of innovative products, works and services	
	2015	2017	2015	2017
Innovative products, work and services for all types of economic activity	373171,3	435557,7	100	100
Including:				
Innovative products, work and services of industrial organizations	332333,4	336524,4	89	68,9
Innovative products, work and services of service organizations	5725,1	9033,3	1,5	1,2
Shipped nanoindustry products	39009,9	285451,7	10,5	29,3

In 2017, the leaders in the volume of innovative factory shipments among the municipalities were industrialized parts of the Republic of Tatarstan. The share of Almetyevsk in the total volume of innovative products shipped as a whole to the Republic of Tatarstan was 35.3%, Kazan – 15.6%, Zelenodolsk – 15.5%, Nizhnekamsk – 14,5%, Naberezhnye Chelny – 9.9% [10]. At the same time, the largest share of innovative products in the total volume of products shipped was noted in the Mendeleevsky municipal district (69.4%), the Zelenodolsk municipal district (15.5%) and the Nizhnekamsk municipal district (15.4%). The value of the indicator called “the volume of innovative goods, works and services” is adjusted depending on the specifics of economic activity, in particular, differences in the level of innovative activity

of the types of economic activity of enterprises, the presence of a high share of commodities etc. [6]. In 2017, the largest volume of innovative goods, work and services was noted for mining operations 2,45556,8 million rubles. (56.4% of the total volume of shipped innovative products), production of fuel coke, petroleum goods-40740.1 million rubles (9.4% of the total amount of innovative goods shipped), chemical manufacturing - 39871 million rubles (9.2% of the total amount of innovative goods shipped), rubber and plastic products – 26950.5 million rubles (6.2% of the total volume of shipped innovative products), production of vehicles and equipment 22,232.5 million rubles (5.1% of the total shipped innovative products), research and development – 7152,7 million rubles (1.6% of total shipped innovative products), fig.3.

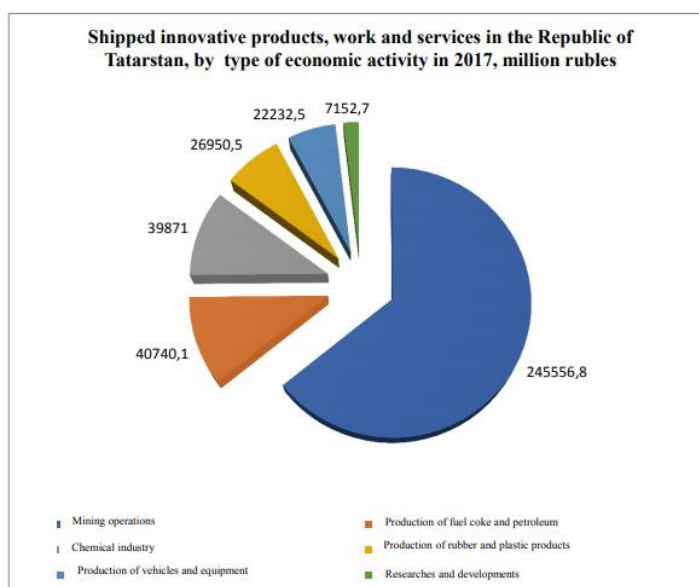


Figure3. Shipped innovative products, work and services in the Republic of Tatarstan by type of economic activity in 2017

In 2017 compared to 2016, the share of innovative products in the total volume of goods shipped in the

whole Republic of Tatarstan increased in the following economic activities: mining operations-by 5 percentage

points, production of fuel coke, petroleum goods-by 1 percentage point, research and development –by 1 percentage point [7]. There was a decrease in the share of innovative products in the total volume of goods

shipped for other types of economic activity: chemical manufacturing - by 2 percentage points, rubber and plastic products - by 2 percentage points, production of vehicles and equipment - by 7 percentage points, fig.4.

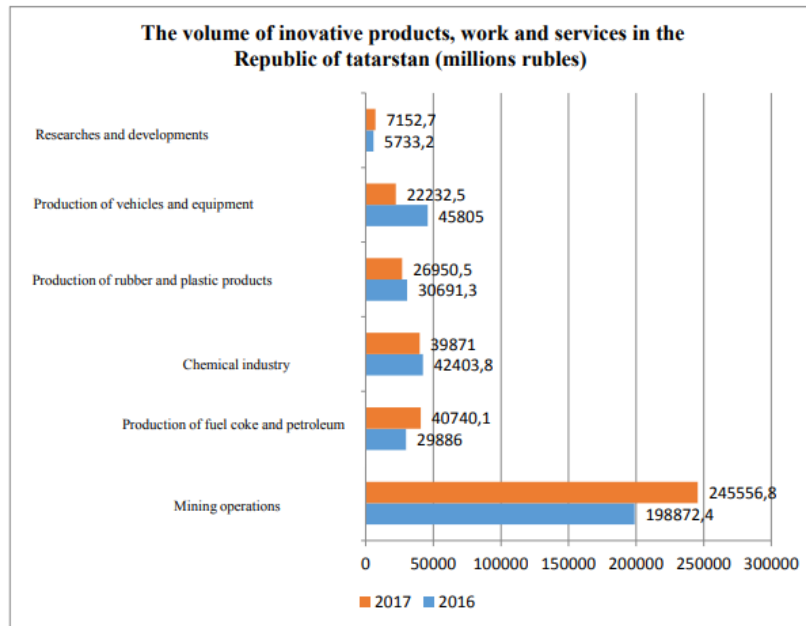


Figure 4. The volume of innovative products, work and services in the Republic of Tatarstan, taking into account its economic activity in 2016-2017

Mineral industries are characterized by producing goods using nanotechnologies – 97455, 4 million rubles. (94% of the total volume of shipped products connected with nanotechnologies), producing rubber and plastic – 2984, 2 million rubles (2, 9% of the total volume of shipped products) and producing petroleum and fuel coke (2, 5% of the total volume of shipped products connected with nanotechnologies) [3]. In

2017 Tatarstan Republic, the industries spent 426524,4 million rubles on shipping innovative products, work and services. The effectiveness can be seen in the share of products, newly introduced in industry or improved during 3 years. Such products constituted 31, 1% of its total volume, while products, that were technically improved constituted 68, 9%, table 3.

Table 3. Manufacturing organizations` level of shipping innovative products

	Millions rubles		Share of the total shipped products volume , %	
	2016	2017	2016	2017
Shipped products, work and services	381783,1	426524,4	100%	100%
Including				
Newly introduced or technologically changed innovative products, work and services over the past three years	139175.5	132458.3	36.5	31.1
Improved innovative products, work over the past three years	242607.6	294066.1	63.5	68.9

The impact assessment of innovations is a proxy indicator of the regional innovative management

quality. The effectiveness of the technological innovations is characterized by indicators showing how

results of the innovative activities influence the development of industry, creating new markets of products and services and the quality of industrial potential. The adoption of the research work results by means of technology transfer is a real opportunity for improving the competitiveness of the local production. The development strategy for introducing innovations in industry and putting modern products at the market is a key to success. As a result, transfer and

innovational technologies commercialization is being particularly valuable.[5] For instance, in 2017 the quantity of new technologies was 956 items (in 2016 - 260 items), and there were 37, or 4% outside the Russian Federation among them. In fact, the largest amount is constituted for buying technologies – 46%, for acquiring license for patents, industrial invention using license, useful models – 2, 6%, targeted recruitment – 2,6%, fig.5.

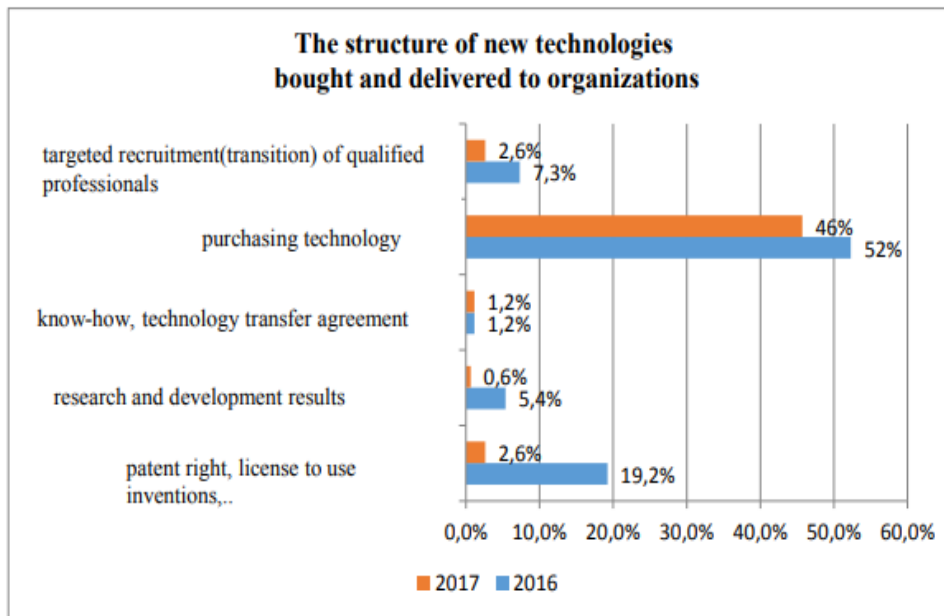


Figure 5. The structure of new technologies bought and delivered to organizations in 2016-2017

The annual tendency of increasing number of new acquired informational technologies, reaching 184 items, has remained in 2017. In the structure of new technologies there are the results of researches and

developments – 43,5%, ownership of a patent, license for using inventions and useful models – 16,8%, selling new technologies – 14,7%, fig.

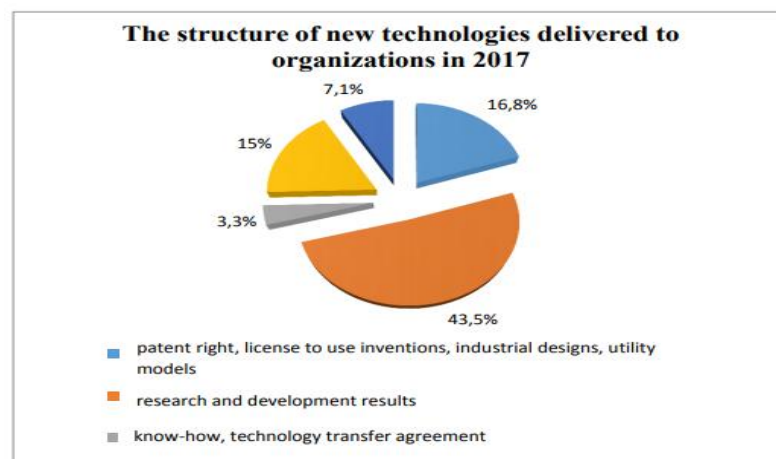


Figure6.The structure of new technologies delivered to organizations in 2017

One of the major factors of the innovative activity development is the cooperation with partners at innovative products delivery with the aim of reaching positive effect and improving the competitiveness of innovatively active industries in general. In 2017, there

were 1660 collaborative projects for making researches, which in comparison with 2016, has increased by 15%. There is small percentage of cooperation with suppliers, materials, software – 58,9%, the consumption of products, work and services

– 19,1%, and organizations in the group -13,2% [8]. In 2017, industries of the Republic of Tatarstan signed 48 agreements with foreign partners about technologies and services export that is 23% more than in 2016. The cost of the agreement subject was 14023, 1 thousands of dollars USA (2016 – 17514, 3 thousands of USA

dollars). The largest percentage in the structure of technologies export had been marked among patent licenses for inventions (75,1%) - 10536,0 thousands of USA dollars and special services (21,2%) – 2993,3 thousand USA dollars, table 4.

Table 4. Commercial transactions for export of technologies and services

	Technologies and services export		Technologies and services import	
	2016	2017	2016	2017
Number of agreements	39	48	245	255
The price of the agreement subject, thousand USA dollars	17514,3	14023,1	807904,1	1153918,7

The import of the technologies requires the opposite tendency. In 2017, 255 technologies and services import agreements were signed with foreign partnership by Tatarstan Republic enterprises, that was 4% more than in 2016. The cost of the agreement subject valued at 1153918,7 thousands USA dollars (in 2016 – 807904,1 thousands USA dollars). In money terms the largest specific gravity in the structure of technologies and services import on the categories of commercial agreements is noted among engineering services (52, 5%) – 604777,9 thousand dollars, trademarks – 21, 7% - 250892,7 thousand dollars, invention patent licenses (13, 5%)- 155476,1 thousand dollars [9,10].

3. Conclusions

Thus some conclusions about the development of Tatarstan Republic innovative activity can be made:

- In the Republic of Tatarstan 167 organizations, or 22% of the total observed enterprises were engaged in innovative activity (in 2010- 14, 9%, in 2014- 20,5%) in 2017;
- The share of the increased innovative products price in gross regional product (GRP) of Tatarstan Republic was 20,6%;
- The amount of innovative products, work and services made in the Republic by enterprises reached the sum of 435557,7 million rubles;
- The share of innovative products, work and services in the total volume of shipped Tatarstan Republic goods is 19,6%;
- In 2017 he largest volume of innovative products, work and services was noted on

mining operations- 245556,8 million rubles (56,4% of the total shipped innovative products volume);

- The leading position in the volume of the shipped innovative products among municipal formations of the Republic of Tatarstan was Almetyevsk, in the total volume of the shipped innovative products in the country reached 35,3%.

- The enterprises on mining operations are characterized by producing goods with the usage of nanotechnologies – 97455, 4 million rubles (94% of the total shipped nanotechnological products);

- In 2017 the amount of the cooperative projects in completing researches and developments in the Republic reached 1660, it increased by 15% comparing with 2016;

- In 2017, industries of the Republic of Tatarstan signed 48 agreements with foreign partners about technologies and services export that is 23% more than in 2016;

- In 2017, 255 technologies and services import agreements were signed with foreign partnership by Tatarstan Republic enterprises, that was 4% more than in 2016 [11,12].

4. Results

As a result of analyzing the Republic of Tatarstan enterprises' innovative activity, conclusion on insufficiency of innovative activity rates can be made. The major course for improving regional economics is transition to the innovative model of development, creating of modern mechanism for effective innovative processes management.

The forming new effective economy, based on knowledge, innovative activity development, high-technology economy sectors and small business as the main conductor of mass innovations should be the priority of the innovative politics of the Republic of Tatarstan.

Acknowledgements

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