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## Business models of big pharma in Russia: A pharmaceutical value chain perspective

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**Abstract.** Large pharmaceutical companies (commonly referred to as Big Pharma) determine transformation trends in the global and national pharmaceutical market, make the largest investments in R&D to create new original medicines, act as leaders in the processes of creating cross-border pharmaceutical value chains. In recent years, more and more Big Pharma companies penetrated the Russian pharmaceutical market. The purpose of this work is to identify the business models of Big Pharma companies in Russia from the point of view of their participation in a particular link of the pharmaceutical value chain, as well as to assess future trends. Based on the analysis of the collected information, we identify the following business models for Big Pharma companies: “export model” of supplying market; “model of transferring R&D links”; “production localization model” at owned enterprises; “model of contract manufacturing”; “model of participation in the links of wholesale distribution and retail”. Foreign companies in Russian pharmaceutical market can use several models, and the more models are used, the deeper the company is integrated into the pharmaceutical chain. Such companies as Sanofi, Abbott, AstraZeneca, and Takeda are engaged in their own localized production and contract manufacturing, and they also exporting produced medicine abroad. So, they are the ones that are mostly involved in the pharmaceutical value chain in the Russian market. The transformation of business models of foreign pharmaceutical companies will be influenced by two interrelated factors: foreign strategy and geographic priorities of Big Pharma and the role of Russia in this strategy, which in turn is determined by the specifics of the Russian pharmaceutical market (compared to other countries).

**Keywords:** medicines, pharmaceutical value chain, Big Pharma companies, business models, localization of production, contractual relations, public procurement

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## **Бизнес-модели присутствия компаний Big Pharma в России: взгляд с точки зрения фармацевтической цепочки создания стоимости**

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**Аннотация.** Крупные фармацевтические компании (которые принято называть Big Pharma) занимают ключевые позиции на мировом рынке. Они формируют тренды развития и трансформации мирового и национальных фармацевтических рынков, осуществляют крупнейшие инвестиции в НИОКР для создания новых оригинальных лекарственных средств, выступают в качестве лидеров в процессах создания трансграничных фармацевтических цепочек стоимости. В последние годы на российский фармацевтический рынок проникает все больше и больше крупных фармацевтических компаний. Цель данной работы состоит в том, чтобы выявить бизнес-модели присутствия компаний Big Pharma в России с точки зрения их участия в том или звене фармацевтической цепочки создания стоимости, а также оценить возможные тренды трансформации их участия в будущем. На основе анализа собранной информации мы выделяем следующие бизнес-модели для крупных фармацевтических компаний: экспортная модель снабжения рынка; модель переноса звеньев НИОКР; модель производственной локализации на собственных предприятиях; модель контрактного производства; модель присутствия в звеньях оптовой дистрибуции и ритейла. Иностранные компании в своей деятельности на российском рынке могут использовать несколько моделей, и чем большее количество моделей используется, тем глубже компания вовлечена в российский рынок и интегрирована в фармацевтическую цепочку. Компании Sanofi, Abbott, AstraZeneca, Takeda вовлечены в собственное локализованное и контрактное производства, они также поставляют произведенную в России продукцию на экспорт. Именно они в наибольшей степени участвуют в фармацевтической цепочке создания стоимости на российском рынке. На трансформацию бизнес-моделей зарубежных фармацевтических компаний будут влиять два взаимосвязанных фактора: внешняя стратегия и географические приоритеты компаний Big Pharma и роль России в этой стратегии, которая, в свою очередь, определяется спецификой российского фармацевтического рынка.

**Ключевые слова:** фармацевтическая цепочки создания стоимости, компании Big Pharma, бизнес-модели, локализация производства, контрактные отношения, лекарственные средства

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## Introduction

Large pharmaceutical companies (commonly referred to as Big Pharma) occupy key positions in the global market. They determine development and transformation trends in the global and national pharmaceutical market, make the largest investments in R&D to create new original medicines, act as leaders in the processes of creating cross-border pharmaceutical value chains.

The UNCTAD (UNCTAD, 2021) rating “Top 100 non-financial multinational enterprises” in 2020 includes 11 largest pharmaceutical companies, in particular: Roche Group (Switzerland), Novartis (Switzerland), Bayer (Germany), GlaxoSmithKline (UK), Sanofi (France), Johnson & Johnson (USA), Teva (Israel), Takeda (Japan), AstraZeneca (UK), Pfizer (USA), AbbVie (USA). According to our estimates, considering that the size of the pharmaceutical market is around 1.3–1.4 trillion dollars, these companies account for about 30% of sales in the global pharmaceutical market.

Most of these companies (apart from AbbVie, Pfizer, and Johnson & Johnson – all from the United States, where the domestic market is very sizeable) have a high share of foreign sales (more than 50% of the value of all company sales), as well as a high level of transnationality index<sup>1</sup> exceeding (sometimes significantly) 50%. This proves that Big Pharma companies in their activities are motivated more by the international than by the domestic market.

In recent years, more and more Western pharmaceutical companies penetrated the Russian pharmaceutical market, and many of them belong to the Big Pharma group. Some companies carry out only export operations in the Russian market, some – started production activities, and some – set up only company offices.

The purpose of this work is to identify the business models of Big Pharma companies in Russia from the point of view of their participation in a particular link of the pharmaceutical value chain, as well as to assess future trends.

The logic of the research is determined by the proposed goal. First, we select pharmaceutical companies whose activities will be analysed in the paper. Then we try to assess scope and scale of the participation of each of the selected companies in certain links of the pharmaceutical value chains. Based on the results obtained, we identify the most frequently used business models of Big Pharma companies in Russian market. In conclusion suggest directions for further developments in Russian pharmaceutical market.

UNCTAD calculates this index as an arithmetic average of three indicators of the company: the share of foreign assets in total assets; the share of foreign sales in total sales; the share of foreign employment in total employment.

## Selection of companies for research

We use Russian ratings to select companies for our research. The most representative and significant company ratings in Russian market are Forbes ratings and RosBusinessConsulting (RBC) ratings.

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<sup>1</sup> UNCTAD calculates this index as an arithmetic average of three indicators of the company: the share of foreign assets in total assets; the share of foreign sales in total sales; the share of foreign employment in total employment.

Russian Forbes publishes three ratings: the rating of the 20 best pharmaceutical companies in Russia, which was first published in 2021 (Forbes, 2021a); the annual rating of the 200 largest private companies in Russia (Forbes, 2021b); the annual rating of the 50 largest foreign companies in Russia (Forbes, 2021c). As for RBC, in November 2021 the seventh rating of the largest companies in Russia was published (RBC, 2021). Let's consider these ratings in more detail.

Unfortunately, such Forbes ratings as “20 best pharmaceutical companies in Russia” and “200 largest private companies in Russia” can be of minor usefulness for the study, since they include only domestic manufacturers, but do not include Russian enterprises of global conglomerates, that is, foreign enterprises.

The Forbes rating “50 largest foreign companies in Russia” includes companies more than by 50% belong to foreign owners. The 2021 ranking (data for 2020) includes four pharmaceutical companies, in particular: Bayer, Johnson & Johnson, Novartis and Sanofi.

To develop the scope of the study, let us turn to the RBC rating “The largest companies of Russia”. The seventh RBC annual rating of business leaders includes 644 companies from 33 sectors of the economy (pharmaceuticals as well). According to RBC rating, there are 35 companies related to the pharmaceutical sectors of the economy, including 23 pharmaceutical manufacturers (13 of them are foreign companies and 10 – Russian ones), as well as 12 Russian companies involved in distribution and retail trade (see Table 1).

As follows from Table 1 leading positions in terms of net revenue are held by Russian companies – Protek, R-Pharm and Pharmstandart (pharmaceutical manufacturers), as well as the two largest pharmaceutical distributors – Katren and FK Pulse. There are also foreign companies in Russian pharmaceutical market; they are the objects of our analysis.

### **Foreign pharmaceutical companies in various links of the pharmaceutical value chain in Russia**

As the goal of our research, we declared the identification of business models of foreign pharmaceutical companies in Russia in terms of their participation in certain links of the pharmaceutical chain. The chain plays a significant role in the development of world pharma industry, since the interaction of the links in the chain largely determines the architecture of the pharmaceutical industry, both at the national and international levels.

Like any other sectoral value chain, a pharmaceutical chain consists of several links (stages). In practice, pharmaceutical chains are very complex; they may include such stages as drug discovery and development; pre-clinical and clinical trials, new drug application; manufacturing, processing, and packaging/labelling; logistics and wholesale distribution, transportation, import-export operations, warehousing; marketing and retailing. The final configuration of a specific pharmaceutical chain is individualized and depends on the manufactured drug, the country of production and final consumption (Volgina, 2021).

Most pharmaceutical value chains can be described using a four-link model: R&D (drug research and clinical trials); manufacturing of approved drugs, including their packaging; distribution of medicines; retail sales. Regarding Russian market, we use this simple four-link model of the pharmaceutical chain, because

complete and comparable information is not available for all the companies we are researching here.

Let us consider in which links of a simple pharmaceutical chain foreign pharmaceutical companies are engaging in Russia.

Table 1

**Pharmaceutical companies in Russian market**

No.	Ranking	Company (ownership)	Industry	Operating income (2020), billion rubles
1.	52	Protek (private)	Pharmaceuticals	301.03
2.	57	Katren (private)	Distribution	269.17
3.	66	FK Pulse (private)	Distribution	226.77
4.	124	R-Farm (private)	Pharmaceuticals	120.52
5.	152	Pharmstandart (private)	Pharmaceuticals	96.17
6.	191.1*	Bayer (foreign)	Pharmaceuticals	75.95
7.	207	Pharmkomplekt (private)	Distribution	67.42
8.	211	BSS (private)	Pharmaceuticals	66.50
9.	217.1	Johnson & Johnson (foreign)	Pharmaceuticals	64.35
10.	239.2	Sanofi (foreign)	Pharmaceuticals	57.69
11.	240	Pharmperspectiva (private)	Distribution	57.50
12.	241	Erkapharm (private)	Retail trade	57.34
13.	264	Neopharm (private)	Retail trade	51.53
14.	268.1	Abbott (foreign)	Pharmaceuticals	50.73
15.	270	Pharmimpex (private)	Pharmaceuticals	50.38
16.	321	Otisipharm (private)	Pharmaceuticals	40.65
17.	330.1	Nizhpharm (Stada) (foreign)	Pharmaceuticals	39.34
18.	332	Pharmacy 36,6(private)	Retail trade	39.27
19.	370	Profitmed (private)	Distribution	34.66
20.	383	Biokad (private)	Pharmaceuticals	33.38
21.	393	Biotek (private)	Pharmaceuticals	32.36
22.	396	Lancet (private)	Distribution	32.14
23.	397.1	Novartis (foreign)	Pharmaceuticals	31.86
24.	408	Delrus (private)	Distribution	30.59
25.	411.1	KRKA (foreign)	Pharmaceuticals	30.14
26.	414	Фармэко (private)	Pharmaceuticals	29.78
27.	417.1	Teva (foreign)	Pharmaceuticals	29.55
28.	431.1	AstraZeneca Pharmaceuticals (foreign)	Pharmaceuticals	28.24
29.	431.2	Sandoz (foreign)	Pharmaceuticals	28.21
30.	433.1	Pfizer Innovations (foreign)	Pharmaceuticals	27.84
31.	441	Avesta pharmaceutika (private)	Distribution	27.38
32.	463.1	Astellas Pharma (foreign)	Pharmaceuticals	25.72
33.	469.2	Boehringer Ingelheim (foreign)	Pharmaceuticals	25.40
34.	476	GK Medsi (private)	Medical services	25.04
35.	486	GDP (private)	Pharmaceuticals	24.37

Source: RBC. Rating "The largest companies in Russia" // RosBusinessConsulting. 2021. No. 11–12. P. 34–48.

\* Foreign companies do not have a rank in the RBC rating. We have added ranks to these companies: for example, a rank 191.1 for Bayer means that Bayer is directly following a 191-ranked Russian company.

*Foreign companies in the R&D link  
of the pharmaceutical value chain in Russia*

Companies such as Bayer, Sanofi, Pfizer, AstraZeneca, and Roche are involved in the R&D link of the simple pharmaceutical value chain.

Bayer supports R&D start-ups, mainly through cooperation with the Skolkovo Foundation, in the development of new drugs. The support is very small

in terms of its financial scale (25 thousand euros). We can mention here the Patent Power project to support the competition for the Skolkovo biomedical cluster, the Nuclear Medicine project in the field of radionuclide medicine. Sanofi as well supports pharmaceutical start-ups in cooperation with Skolkovo. There is no data on the commercial implementation of these start-ups (December 2021).

Pfizer is involved in clinical trials; the company received permission from Roszdravnadzor to conduct clinical trials of the effectiveness of the protease inhibitor + ritonavir for the prevention of COVID-19. Paxlovid trials in Russia will last until March 2023 and will be conducted in several public and private medical institutions in Moscow region, St. Petersburg, Smolensk, Barnaul and other cities; 90 people will take part.

AstraZeneca is also conducting clinical trials in Russia: in July 2021 the company started to test a combination of AstraZeneca and Sputnik Light vaccines. The trials, as reported, are being carried out on 150 adult patients. Joint studies are taking place based on three Russian medical organizations in St. Petersburg the Smorodintsev Research Institute, First St. Petersburg Medical University and private company Kurator, as well as in the Moscow clinics Oris and Medsi.

Roche conducts international clinical trials in Russia (more than 27 as of December 2021) in the framework of long-term cooperation with leading Russian medical research centers. Physicians from these institutions are studying the effectiveness and safety of the company's medicines.

So, foreign companies are moving R&D units to Russia on an extremely limited scale; these units can be described as separate elements of the R&D link. These R&D transfers are fragmentary and often have one-off character, there are no stable and long-term ties in the chain yet. Moreover, there are no signs of involvement of Russian R&D link in the world pharmaceutical value of a particular medicine of a certain foreign company. The commercialization of the R&D link is also limited.

*Foreign companies in the manufacturing link  
of the pharmaceutical value chain in Russia*

Russian pharmaceutical industry has always been extremely interested in organizing foreign production in Russia. This was clearly stated in the “Strategy for the Development of the Pharmaceutical Industry of the Russian Federation for the Period up to 2020” (Pharma-2020), which included the transition to an innovative development model for the pharmaceutical industry localization of foreign manufacturers, stimulation of high-tech production as well as import substitution. During 2013–2018 Russian manufacturers have opened about 30 new production sites. Foreign companies have built 7 new pharmaceutical plants. In addition, 78 foreign companies have localized their manufacturing in the form of contract relations with Russian enterprises<sup>2</sup>.

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<sup>2</sup> Russian newspaper. Special issue, No. 224 (7678), 7 October. 2018. Retrieved November 28, 2021, from <https://rg.ru/2018/10/07/farma-2020-dala-impuls-k-razvitiu-otechestvennoj-farmindustrii.html>

According to our estimates (as of December 2021), all 13 foreign companies selected for analysis have production in Russia, but the “quality” and scale of this presence are different (Table 2).

Table 2

**Localisation of Pharmaceutical Production in Russia**

No.	Company	Pharmaceutical production in Russia (including packaging) Manufacturing companies in Russia	Exports of manufactured medicines from Russia
1.	Bayer	Minor contract manufacturing* (including packaging) at Russian enterprises Medsintez and Polisan	
2.	Johnson & Johnson	Minor contract manufacturing at Russian enterprise Akrikhin	
3.	Sanofi	Minor contract manufacturing (mainly packaging) at Russian enterprises Pharmstandart-Ufavita and ORTAT Localized production (including packaging) at Sanofi-Aventis Vostok own plant (about 12 medicines are produced, the main one is insulin)	Insulin is exporting to Europe
4.	Abbott	Localized production at own enterprise Veropharm (3 plants – in Voronezh, Belgorod and Vilginsk) Minor contract manufacturing (including packaging) at Russian enterprises Pharmstandart-Leksredstva, Pharmstandart-Tomskkhimfarm, R-Pharm, Research Institute of Chemical Diversity	
5.	Nizhpharm (Stada)	Localized production (more than 40 medicines) at Nizhpharm enterprise (which is part of the STADA company) Minor contract manufacturing at Russian enterprises Makiz-Pharma, Hemofarm, etc.	Exports to Europe is planning
6.	Novartis	Localized production at own company Novartis Neva (7 medicines, including packaging)	
7.	KRKA	Localized production (more than 20 medicines) at own enterprise KRKA-RUS (Istra)	Export to 8 CIS countries and 8 EU countries
8.	Teva	Localized production at Teva own plant in Yaroslavl region (8 medicines) Teva is currently selling the plant to Russian company R-Pharm, which will continue to produce Teva products	
9.	AstraZeneca Pharmaceuticals	Localization of production at own enterprise in the Kaluga region (greenfield investment) Minor contract production of the AstraZeneca vaccine at the R-Pharm plant in Pushchino	The produced vaccine is fully exported
10.	Sandoz (Novartis division)	Minor production at the Novartis Neva plant	
11.	Pfizer Innovations	Minor contract manufacturing at Russian enterprises Polisan and Petrovax (in the future – at Pharmstandart-Ufavita enterprise)	
12.	Astellas Pharma	Minor contract manufacturing at Russian enterprise ARTAT (5 medicines)	
13.	Boehringer Ingelheim	Minor contract manufacturing (packaging) at Russian enterprise Pharmstandart-Ufavita	
14.	Takeda	Localization of production at Takeda Pharmaceuticals own plant in Yaroslavl Minor contract manufacturing at Russian enterprises Pharmstandart-Leksredstva and Pharmstandart-Ufavita	Export to Belarus and Uzbekistan
15.	Servier Rus	Localization of production at own plant Servier Rus in the village Krasnopakharskoe (Moscow)	
16.	F.Hoffmann-La Roche (Roche Moscow)	Contract manufacturing (17 medicines) at Russian enterprises ORTAT, Pharmstandart-Ufavita, Dobrolek, Makiz-Pharma, Raduga Production, Pharmstandart-Leksredstva	
17.	Merck	Minor contract manufacturing at Russian enterprises Nanolek, Pharmstandart-Ufavita, Pharmacor Production	

\* Minor contract manufacturing – less than 10 drugs.

Sources: official websites of companies; Directory of medicines <https://www.vidal.ru/>

Not all Big Pharma companies were included into the RBC rating, though some of them have localized pharmaceutical production in Russia. According to the DSM Group report for 2020 (DSM Group, February 2021), such companies as Takeda, Servier, F. Hoffmann-La Roche and Merck are in Russian pharmaceutical market. Thus, we have added information about them into the Table 2 (No. 14–17).

Based on the information that is summarized in Table 2, we concluded that foreign pharmaceutical production is carried out both in the form of localized production in owned factories, and in the form of contract production.

Localized production at owned enterprises is carried out by 10 companies Sanofi and Sandoz (Sanofi-Aventis Vostok plant), Stada (Nizhpharm plant), Abbott (Veropharm plant), Novartis (Novartis Neva plant), KRKA (KRKA-RUS plant), Teva (plant in the Yaroslavl region), AstraZeneca (AstraZeneca Pharmaceuticals plant), Takeda (Takeda Pharmaceuticals in Yaroslavl region), Servier (Servier RUS plant in Moscow).

Minor contract manufacturing (less than 10 medicines) is made by almost all companies, except for Novartis, KRKA, Teva, Sandoz, Servier (companies that produce medicines on a large scale at their own localized factories). Manufacturing contracts are concluded with Russian pharmaceutical producers, with companies such as Akrikhin, Research Institute of Chemical Diversity, Makiz-Pharma, Medsintez, ORTAT, Petrovax, Polisan, R-Pharm, Pharmstandart-Leksredstva, Pharmstandart-Tomskkhimfarm, Pharmstandart-Ufavita, Hemofarm, etc.

Only 4 companies – Sanofi, KRKA, AstraZeneca, and Takeda, carry out exports of locally produced medicines. We suppose that these companies can be involved in global or regional pharmaceutical value chains. At the same time, the volume of exports of medicines from Russia is very limited: in 2020, according to various estimates, it amounted to about \$ 0.6–0.8 billion dollars. The share of Russian exports in the world pharmaceutical market is rather small and accounted to about 0.09% (NRA, July 2020, p. 5).

The main export market for Russian medicines is the post-Soviet territory (75% of total exports), primarily Kazakhstan (16%), Ukraine (15%) and the Republic of Belarus (13%) (Deloitte, 2019, p. 10).

So, we conclude that in the manufacturing link of the pharmaceutical value chain, foreign companies use two forms of localized production: at their own enterprises, as well as contract production at enterprises owned by Russian owners. Unfortunately, due to the lack of comparable data, it is not yet possible to assess the comparative scale of pharmaceutical production in Russia carried out by certain foreign companies.

#### *Foreign companies in the distribution and retail links of the pharmaceutical value chain in Russia*

Marketing of manufactured pharmaceutical products includes various tools: interaction with medical personnel, stimulation of pharmacy chains by paying them a bonus directly by the importer / manufacturer, stimulating pharmacy chains by concluding agreements with them on the provision of services, paying bonuses to distributors or concluding agreements with them on the provision of promotion services, interacting with patients / consumers directly, online sales through intermediaries, online selling through their own online store (Deloitte, 2019, p. 18).



As a rule, foreign pharmaceutical companies are weakly involved in the distribution and retail chain, where Russian distributors play the leading roles. The largest of them are Katren and FK Pulse, as well as pharmacy chains, for example, 36.6 and retail companies, in particular, Erkafarm and Neopharm (Table 2). This situation of “local dominance” is typical for many countries where there is foreign pharmaceutical production. Local companies are closer to the final consumer, know the target audience better, have flexible communication with government agencies, etc.

At the same time, some elements of foreign companies’ participation in the distribution and retail links in the pharmaceutical value chain can be found in some companies. Here are some examples.

So, Russian division of the pharmaceutical company Sanofi – Sanofi Russia JSC – in 2020 established a new wholesale company Opella Healthcare to carry Sanofi OTC business in Russia. In addition, Sanofi Russia directly supplies government customers with alglucosidase alfa (Mayozyme) for the treatment of Pompe disease.

The KRKA company has in Russia a subsidiary company KRKA PHARMA that relates to marketing and sales of medicines produced in Slovenia and Russia.

Stada, through its subsidiary company Nizhpharm, concluded agreements with pharmacy chains to encourage sales volumes. Under such agreements, retailers receive money rewards from pharmaceutical companies for achieving certain level of sales. However, in October 2020, Stada CIS cancelled such agreements with pharmacy chains.

We suppose that the participation of foreign companies in this link of the pharmaceutical chain can be expanded soon. This is due to several circumstances. Thus, the concentration of the distribution market is gradually decreasing; the largest distributors focused on developing sales through pharmacy chains, whose share in the pharmaceutical market is gradually decreasing in favour of the public sector (NRA, July 2020, p. 8). In addition, digitalization of the market will allow foreign companies to develop their own online sales and gain a foothold in the retail chain.

### **Exports of foreign pharmaceutical companies to Russia**

As follows from Table 1 Bayer and Johnson & Johnson are leading foreign pharmaceutical companies in terms of revenue in Russian market. At the same time, as we found out (Table 2), the volumes of their pharmaceutical production in Russia are very insignificant and mainly limited to contract manufacturing.

The explanation of the “phenomena” of Bayer and Johnson & Johnson is very simple: these companies supply Russian pharmaceutical market mostly by exports. And these companies are not exceptions – large-, medium- and small-size foreign pharmaceutical companies are involved in export activities; moreover, for most companies, it is the main one.

Statistical data confirm the conclusion about the large-scale export activities of pharmaceutical companies in the Russian market.

The volume of the Russian pharmaceutical market in Russia in 2020 amounted to 2,040 billion rubles or 28.0 billion US dollars, which is accounted to 2.1% of the global pharmaceutical market (DSM Group, February 2021, p. 19).

At the same time, Russian market continues to be strongly dependent on imports. Russia is a net importer of medicines: in recent years, imports have exceeded exports by at least 13 times.

In 2020, Russian pharmaceutical imports amounted to 11.9 billion US dollars, including imports of medicines – 7.8 billion (or 65.5%), imports of substances – 1.8 billion (14.8%), and imports of parapharmaceutical goods, which include patient care and hygiene products, dietary supplements, and cosmetics – 2.3 billion (19.7%). This means that foreign pharmaceutical products (imported or locally produced) account for about 40% of Russian market.

Even though, in general, the number of Russian and foreign manufacturers on the market is almost the same (about 540 and 560 companies, respectively), foreign brands of medicines are more represented in pharmacies compared with Russian ones (DSM, 2020, p. 20).

If we consider the volume Russian market in ruble terms, then the share of foreign medicines in the market at the end of 2020 accounted to 56.3% in rubles and 31.4% in packages (NRA, July 2020, p. 4).

The pandemic and border closures have highlighted another weakness of Russian pharmaceutical industry – extremely high dependence of domestic (localized) production on imported substances. So, only 15% of the necessary substances are produced in Russia, the rest is imported from abroad, mainly from China (20% of supplies), France (17%) and India (10.5%) according to NRA estimates (NRA, October 2021, p. 8). We suppose that if localization of foreign pharmaceutical production in Russia grows the dependence of pharmaceutical production in Russia on imports of substances will strengthen.

### **Business models of foreign pharmaceutical companies in Russia**

Business models for companies entering foreign markets have been in detail discussed in Russian and foreign literature (see, for example, Buckley, 2008; Bukhvalov, Alekseeva, 2015; Tretyak, Klimanov, 2016; Volodin, Podkovyrov, 2018). Several works are devoted to the analysis of business models that pharmaceutical companies are building in foreign markets (see, for example, Capo et al., 2014; Kravchenko, Yusupova, 2019; Yasinskaya, 2020). Despite the solid development of this subject, the question of business models of pharmaceutical companies from the perspective of global value chains approach is not well covered in the literature. We have tried to fill this gap using the case of the Russian pharmaceutical market.

Based on the analysis of the collected information, we identify the following business models for Big Pharma companies connected with the links of the pharmaceutical value chain in the Russian market:

- “Export model” of supplying market.
- “Model of transferring R&D links”.
- “Production localization model” at owned enterprises.
- “Model of contract manufacturing”.
- “Model of participation in the links of wholesale distribution and retail”.

The “export model” of supplying market is the most common (and the least risky) model used by both large and small companies. In terms of the medicines

supply, this model is only indirectly related to the pharmaceutical value chain (for example, in the part where the company makes a choice for itself: either exporting or producing locally). In terms of substances supply, this model is closely related to the manufacturing link of the pharmaceutical chain since it works like an input for localized production in Russia.

The “model of transferring R&D links” has not yet become widespread in Russia, first, due to the peculiarities of Russian pharmaceutical market with the weak development of pharmaceutical innovations and a relatively small market volume. Only a few foreign companies run clinical trials and start-ups in Russia. At the same time, it should be noted that this model, which is often called R&D outsourcing, has become popular not only in developed markets (EU, USA, Japan), but in some emerging markets. So, in recent years, there has been a large-scale transfer of R&D links to China, both in form of Big Pharma branches, and in the form contractual relations, so called R&D outsourcing.

The “production localization model” (direct localization of pharmaceutical production of foreign companies at their owned plants in Russia) is closely connected to the “model of contract manufacturing”. In both models’ foreign companies are in close interaction with Russian manufacturers since they know the market well, have connections with the distribution and retail links of the pharmaceutical chain, as well as with government organizations and institutions.

The weak point of both “production” models in Russian version is the insignificant exports volumes of medicines produced in the localized and contract manufacturing enterprises. These exports go, first, to the markets of the EAEU and CIS countries and the CIS.

The “model of participation in the links of wholesale distribution and retail” is very poorly developed; local companies control this segment of the pharmaceutical chain, and this is a common practice in many national pharmaceutical markets.

Summing up, we must stress that foreign companies in Russian pharmaceutical market can use several models, and the more models are used, the deeper the company is integrated into the pharmaceutical chain. Such companies as Sanofi, Abbott, AstraZeneca, and Takeda are engaged in their own localized production and contract manufacturing, and they also exporting produced medicine abroad. So, they are the ones that are most involved in the pharmaceutical value chain in the Russian market.

## Conclusion

The transformation of business models of foreign pharmaceutical companies in the Russian market will be influenced by two interrelated factors: foreign strategy and geographic priorities of Big Pharma and the role of Russia in this strategy, which in turn is determined by the specifics of the Russian pharmaceutical market (compared to other countries).

We suppose that some features of Russian pharmaceutical market reduce its attractiveness for large-scale foreign expansion of Big Pharma companies, primarily in the manufacturing link of the pharmaceutical chain:

- relatively low capacity of Russian market (including low per capita expenses for the purchase of medicines by households);

- high dependence on the imports of substances for the production of medicines on the territory of Russia;
- imperfections and contradictions in the legislative regulation of the pharmaceutical industry;
- problems with the protection of intellectual property rights (the case with the anticancer drug Nexavar from Bayer);
- currency and geopolitical risks.

The main drivers of market growth in the medium- and long-term perspective will be an increase in government purchases of pharmaceutical and medical products, as a part of implementation of the Pharma-2030 strategy (which is not adopted yet). Participation of foreign companies in public procurement programs is possible for them if there is an appropriate level of localization of production in Russia. However, in practice, foreign companies are faced with conflicting methods for assessing the level of localization, which prevents them from fully participating in government and concluding SPIC contracts.

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