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Understanding the Role of Socio-Demographics and Economics in Russia's Pharmaceutical Industry

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Abstract

Over the past 25 years, significant events have profoundly affected Russia's overall industry, especially the pharmaceutical sector. Key factors such as the 2014 crisis, the COVID-19 pandemic, the 2022 sanctions, and Russia's changing international political position have affected not only the country's economic situation but also its demographic structure. The Russian population is aging, with a declining birth rate despite state efforts to address the issue. In addition, the mortality rate, including among the younger generations, has increased significantly in recent years. The volatile economic and political climate has also led to the emigration of many young and educated people. Social changes, such as the growth of social media, the influence of mass media, and the increase in the retirement age, have also played a significant role in shaping citizens' behavior, especially in terms of medicine selection and purchasing decisions. This paper examines the economic events of recent years that have most influenced pharmaceutical policy and consumer preferences, providing statistical data on the Russian population by various categories and analyzing the social factors that impact consumer behavior.

Keywords: Russian pharmaceutical market, Mortality, COVID-19 pandemic, Fertility, Generics, Pharmacy

Introduction

The industrial sector is a complex economic system shaped by various influencing factors. Understanding and categorizing these factors allows for identifying development pathways and support strategies for the industrial sector, along with organizing the tools and approaches for regulating its activities [1-4]. External factors affecting the industrial sector relate to societal and environmental influences on cluster formation. Key social factors include employment levels, demographic trends, social tension, purchasing power, and population health [5, 6].

The Russian pharmaceutical market comprises two primary segments: commercial and state sectors. A significant portion of medicine consumption comes from individual spending, making up about 64% in financial terms and nearly 85% in volume. As a result, understanding the pharmaceutical market in Russia requires considering not only global political and economic factors but also local consumer behaviors and preferences [7-9].

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This study aims to explore the economic and socio-demographic influences on consumer behavior in Russia and how these factors affect the growth and dynamics of the pharmaceutical industry.

Results and Discussion

Economic landscape of the pharmaceutical market in Russia

Russia's economy has encountered various challenges throughout its history, with each crisis fostering growth in sectors such as the pharmaceutical industry. The 1998 crisis highlighted the underdevelopment of the domestic pharmaceutical market. At the same time, increasing prices for imported drugs made them largely unaffordable for many Russians, revealing the need for a self-sufficient domestic drug production system [10-12]. Since 2009, the Russian government has actively supported the growth of its domestic pharmaceutical industry. The "Pharma 2020" initiative was introduced, aiming for at least 50% of medicines to be produced by domestic manufacturers by 2020.

In the period of 2014-2015, a combination of global oil price declines, political tensions with Ukraine, and the annexation of Crimea led to a steep depreciation of the ruble. In July 2014, the exchange rate was 34.7 rubles per US dollar, which increased to 55.6 rubles by December 2014, and 70 rubles by February 2015. The Bank for International Settlements (BIS) reported a 30.4% decrease in the ruble's real effective exchange rate from December 2013 to September 2015, a decline that was more severe than the 2008-2009 financial crisis. This depreciation significantly contributed to inflation, lowering real incomes, reducing purchasing power, and diminishing domestic demand.

In 2018, the Russian pharmaceutical market faced a significant setback as real incomes and purchasing power sharply declined, leading to a drop in drug consumption. This situation prompted all players in the pharmaceutical industry to reassess their approach to consumers to maintain profitability at levels seen in previous years. For the first time since 2011, growth in the Russian pharmaceutical market stagnated **(Figure 1)**.

Despite these challenges, the federal "Pharma 2020" program was revised in 2019, extending its goals through 2024. One of the key targets set for 2024 was to ensure that 93% of drugs listed as essential medicines would be produced domestically within Russia.

The outbreak of COVID-19 in 2020 added a new dimension to the pharmaceutical market, driving demand for treatments, personal protective equipment, vaccines, and various preventive measures. This unforeseen factor became the central influence on the pharmaceutical industry in 2020. The Russian market experienced a growth rate of 9.8%, exceeding the predicted 5% **(Figure 1)**.

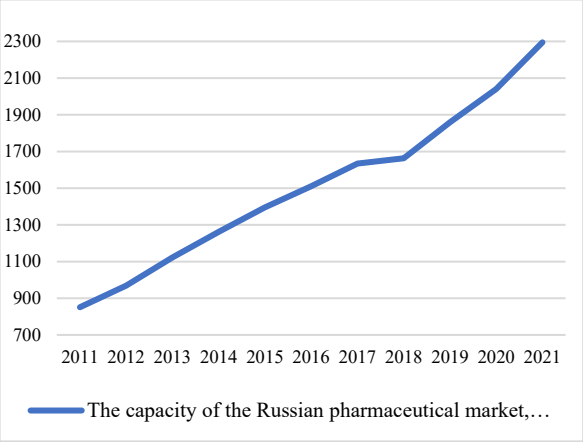

Figure 1. Capacity of the Russian pharmaceutical market, billion rubles, from 2011 to 2021

Experts in economics report that the profit of the Russian pharmaceutical sector nearly doubled in 2020, rising from 126.3 billion rubles to 244.4 billion rubles. This dramatic increase was attributed to several key factors:

- Higher drug prices.
- A shift in consumer preference towards either more expensive or cheaper medicines.
- Increased demand for larger medication packages.
- The panic induced by quarantine leads consumers to stock up on medicines.

Despite this profit surge, Russian-made medicines represented over 65% of the market in 2020-2021 in terms of volume, while only 42-45% of the market's monetary value was accounted for by domestically produced drugs.

The geopolitical events of February 2022 have had a significant negative impact on the Russian pharmaceutical market. While the industry itself was not directly targeted by sanctions, the side effects of sanctions in other sectors, such as disruptions in packaging production and longer logistics chains, severely affected the market.

Despite these challenges, many Western pharmaceutical companies, including Sanofi, Novartis, PMS, and Roche, have committed to continuing their operations in Russia, citing their priority on public health and welfare. Several international companies have also moved some of their production to Russia, consolidating their positions in the market. However, major companies like Pfizer and Bayer, while still supplying medicines, have halted investment and research activities in Russia [13-15].

It is clear that since 2022, there has been a shift in market dynamics, with Russian and Asian pharmaceutical manufacturers gaining the opportunity to expand their market share and influence.

Social and demographic factors impacting Russia's pharmaceutical industry

The social and demographic landscape in Russia is currently complex and challenging. A combination of global political tensions, the COVID-19 pandemic, and multiple economic crises over the past two decades have resulted in several significant consequences:

- Emigration: A large portion of the population, primarily young, well-educated individuals (such as IT professionals and scientists), has left Russia in recent years. The average age of emigrants is around 30 years, with almost 6 million people reportedly leaving the country between February and November 2022.
- Immigration: Russia has seen an influx of people from neighboring countries, particularly from Tajikistan, Kazakhstan, Uzbekistan, China, and Georgia. These immigrants tend to have less formal education but are willing to take on physically demanding jobs.
- Low Birth Rate: Despite various state initiatives designed to boost the birth rate, such as maternity capital and other financial incentives, these efforts primarily result in increased birth rates among economically disadvantaged families.
- Aging Population: Russia is facing a significant demographic shift, with a steadily increasing aging population, which is putting additional strain on social and healthcare systems.
- Health Decline: There is a noticeable decline in both physical and mental health among the working-age population, alongside a reduction in life expectancy.
- Reduced Purchasing Power: Economic instability has led to a decrease in the population's purchasing power, impacting their ability to afford essential goods, including medicines.
- Increased Retirement Age: The government has raised the retirement age, adding further pressure on the workforce and social systems.

These socio-demographic factors are having a direct impact on the pharmaceutical market in Russia. While the country faces challenges such as a high outflow of its population and rising mortality rates, the demand for medicines continues to grow as the population's health needs increase **(Figure 2)**.

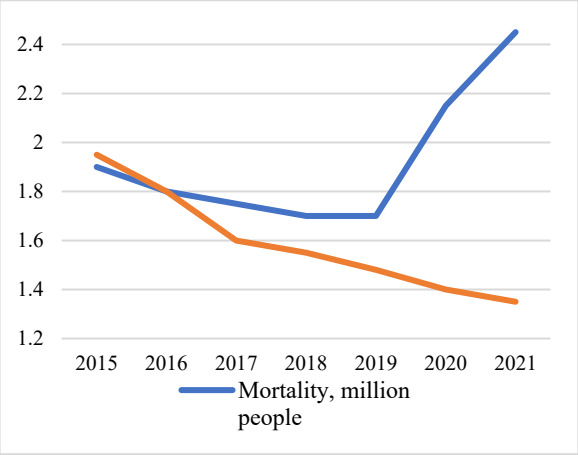

Figure 2. Birth and death statistics in Russia from 2015 to 2021

Men and women aged 55 to 65, who would typically have been able to retire, are now compelled to remain in the workforce. This is due to the pension reform introduced in Russia in 2019, which raised the retirement age for women from 55 to 60 years and for men from 60 to 65 years. As a result, the adult population, now lacking sufficient rest and required to maintain daily work performance, is increasingly dependent on medications **(Figure 3)**. For individuals over 60 years, prescriptions are often provided for several purposes:

- Preservation, correction, and enhancement of functional status: This includes maintaining overall well-being, physical health, and cognitive function.
- Ensuring independence: The goal is to minimize the need for external assistance as much as possible, enabling individuals to maintain autonomy.
- Prevention of geriatric syndromes: This includes preventing or managing age-related conditions such as senile asthenia (e.g., weight loss, frailty), sensory

impairments (hearing loss, vision problems), anxiety, depression, falls, incontinence, and malnutrition.

- Management of chronic diseases: Regular monitoring and treatment of ongoing health conditions, including preventing relapses and exacerbations, are crucial at this stage in life.

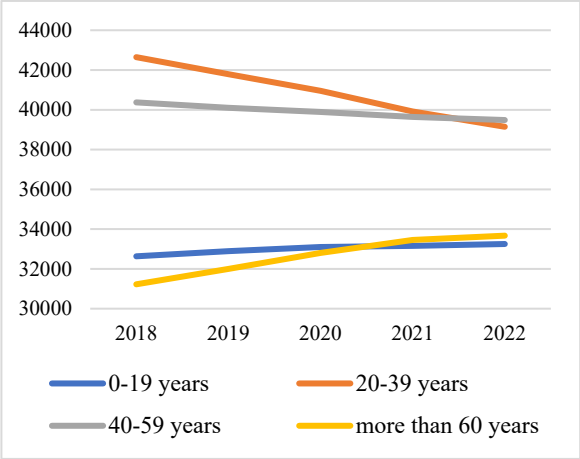

Figure 3. The number of representatives of various age groups in Russia from 2018 to 2022, million people

At the same time, individuals in pre-retirement age often struggle to find the time or opportunity to visit a doctor promptly. As a result, self-medication has become common, with many adults selecting medications based on advertisements, advice from acquaintances, or information gathered from the media.

The state of the Russian pharmaceutical market from the consumer's perspective

As the number of medications used by the population increases, the cost of these medicines rises, while the purchasing power of Russian citizens continues to decline. This trend leads to a logical conclusion: there is a growing need to reduce the cost per unit of pharmaceutical production. How is this being achieved? One of the ways this cost reduction is being realized is through a shift towards domestically produced medicines. Statistics from major pharmaceutical manufacturers and suppliers from late 2019 to early 2022 show a growing preference for Russian-made drugs **(Table 1)**. It's important to note that foreign medications typically cost about 30% more than their Russian counterparts.

Additionally, Russian consumers are increasingly opting for generic drugs. A generic is a medication that contains the same active pharmaceutical ingredient as the branded (patented) version. In simpler terms, generics offer the same therapeutic effects as the original drug but at a lower cost. In contrast, branded drugs are protected by patents, and the pharmaceutical companies that develop them hold exclusive rights for production, after completing extensive preclinical and clinical trials [15].

The adoption of generics has gained momentum, largely due to the spread of information through social networks. Initially, open platforms began publishing lists of original medicines and their generic counterparts, which later found their way into mass media. This form of communication is especially influential among older and middle-aged consumers **(Table 2)**.

Table 1. The largest manufacturers and suppliers of medicines in the Russian market

November 2019				January 2022			
№	**Name of the manufacturer**	**Cost volume, million rubles**	**Fraction, %**	**№**	**Name of the manufacturer**	**Cost volume, million rubles**	**Fraction, %**
1	Bayer	4136.3	4.6	**1**	Otisipharm	6177.7	5.3
2	Sanofi	3297.8	3.7	**2**	Bayer	4895.7	4.2
3	Novartis	3226.1	3.6	**3**	Novartis	3969.6	3.4
4	Otisipharm	3065.6	3.4	**4**	Stada	3862.1	3.3
5	Teva	2945.6	3.3	**5**	Sanofi	3619.8	3.1
6	Servier	2772.6	3.1	**6**	GlaxoSmithKline	3541.7	3.0
7	KRKA	2618.3	2.9	**7**	Teva	3409.7	2.9
8	GlaxoSmithKline	2599.8	2.9	**8**	Abbott	3269.9	2.8

9	Berlin-Chemie	2346.2	2.6	**9**	A.Menarini	3271.6	2.8
10	Gedeon Richter	2260.3	2.5	**10**	Servier	3037.5	2.6

Table 2. List of some popular original medicines and their cheap analogs

Original medicinal product (a)	Generic (b)	Cost ratio (a/b)	Original medicinal product (a)	Generic (b)	Cost ratio (a/b)
Voltaren	Diclofenac	7.9	Nurofen	Ibuprofen	10.7
Diflucan	Fluconazole	23.5	Penang	Asparkam	14.2
Zovirax	Acyclovir	19.5	Aspirin Upsa	Acetylsalicylic Acid	21
Immunol	Echinacea	5.24	Mezim-Forte	Pancreatin	2.5
Iodomarin	Potassium Iodide	3.45	Panadol	Paracetamol	2.6
Lazolvan	Ambroxol	12.9	Claritin	Clarotadine	2.2
Noshpa	Drotaverine	10.6	Fastum Gel	Orthophen	7.2

A promising, simple, and cost-effective approach to developing Russia's pharmaceutical market is the production of generic versions of original drugs that have lost patent protection. From the state's perspective, this could address the challenge of replacing imported medicines [16, 17]. For pharmaceutical companies, it offers an opportunity to boost profits and expand market shares. From a medical viewpoint, generics, which contain the same active ingredients as the original drugs, offer similar therapeutic effects at a fraction of the cost, allowing more patients access to essential treatments [18-20].

However, producing generics is not without its challenges [21]. While it is relatively straightforward to replicate the active ingredient, chemically complex drugs might display different physical properties due to variations in manufacturing methods, potentially affecting their bioavailability and overall efficacy [22].

Another difficulty involves creating excipients such as stabilizers [23, 24]. Patents often do not provide the full details on these substances, and although laboratory testing can determine their composition, the exact conditions, timing, and sequence for incorporating them must be established through trial and error. This variability can impact the final product's performance.

As a result, generics might not always meet bioequivalence or therapeutic equivalence standards. This is not typically a concern with simple medications, but it becomes critical with complex drugs where slight differences in dosage or the need for precise blood concentration can lead to adverse outcomes [11, 25].

Perfect generics are rarely produced in practice. Complaints about generics typically stem from the absence of a universal testing standard, which leads to ineffective drugs reaching the market and potentially causing harm. To address this, a comprehensive transition to good manufacturing practice (GMP) standards is essential for ensuring that all pharmaceutical companies meet rigorous quality control. Developing generics that are therapeutically equivalent or even superior to their branded counterparts, while meeting all necessary regulatory standards, remains a long and challenging process [26, 27].

An interesting trend observed during the COVID-19 pandemic was a heightened awareness among Russian citizens about their health. This shift in priorities led to a surge in the use of certain medications, as shown in **Table 3**, reflecting the increased demand for treatments during the crisis.

Table 3. Drugs that occupy leading positions in 2021 relative to the beginning of 2020 [16].

Appointment	Title	Dynamics of demand and consumption
Antimicrobial drugs	Levofloxacin	+463.1%
	Ceftriaxone	+382.4%
	Arbidol	+404.7%

Immunomodulators	Ingaron	+225.4%
	Grippferon	+166.3%
	Bronchomunal	+57.5%
Drugs intended for the prevention and treatment of thrombosis and embolism	Eliquis	+79.2%
	Curantil	+65.9%
	Pradaxa	+37.6%

In 2020, despite the difficult economic conditions and a significant decline in the real incomes of Russians, their spending on medicines did not decrease, and in fact, the demand for more expensive medications increased. In contrast, medications in the average price range were more often replaced by cheaper alternatives. This trend raises a critical question: why did the consumption of higher-priced drugs rise significantly despite the financial difficulties?

Several factors contribute to this phenomenon:

1. Pharmacy policy

Modern pharmacies often feature brightly lit displays showcasing high-priced medications, with cheaper alternatives relegated to the back shelves. In some cases, unscrupulous pharmacists may recommend more expensive options, even when the consumer requests a more affordable alternative. This practice encourages consumers to buy pricier products, even if they do not fully meet their needs.

2. Doctors' policy

Doctors frequently prescribe medications based on their effectiveness, without considering the financial limitations of their patients. Medical advancements often result in newer, more effective medications that tend to be more expensive than older alternatives. As a result, patients are prescribed these newer drugs, even if they cannot afford them, as the focus is placed on the drug's effectiveness rather than its cost.

3. Placebo effect and treatment standards

The placebo effect also plays a significant role in the rise in medication consumption. Many patients believe that their treatment will only be effective if they are prescribed a range of medications, including those that may have limited proven efficacy. Doctors may prescribe such drugs, especially immunostimulants or immunomodulators, as part of treatment standards for common illnesses like colds and respiratory infections. This contributes to the continued demand for these medications, even if their effectiveness is questionable.

These factors together help explain why the pharmaceutical market in Russia saw an increase in the consumption of more expensive medicines, even in the face of a challenging economic environment **(Table 4)**.

Table 4. Groups of drugs with unproven efficacy [27]

Groups of drugs with unproven efficacy	Some medications
Homeopathic remedies	Ocillococcinum, traumel C
Release-active drugs	Anaferon, ergoferon, impaza, tenoten, proproten-100
Immunomodulators and Immunostimulators	Kagocel, polyoxidonium, tactivin, thymalin, thymogen
Some antiviral drugs	Arbidol, amixin, kagocel
Some hepatoprotectors	Essentiale, carsil, artichoke extract, glycyrrhizin, pumpkin seed oil, preparations derived from cattle liver extract
Chondroprotectors	Chondroitin, glucosamine, hyaluronic acid
Nootropics	Piracetam, hopanthenic acid, phenibut, glycine, cerebrolysin, cortexin

Publicity in the Media

Self-medication remains a popular practice in Russia, largely due to difficulties in visiting a doctor quickly or a heavy workload. Popular medications are often promoted through TV and radio advertisements, as well as social media, which influences consumer choices and drives demand.

Conclusion

In conclusion, 2022 has proven to be a challenging year for the Russian pharmaceutical market, marked by uncertainty and change. There has been a notable decline in the participation of European companies—some are leaving the market, while others continue to supply medicines but have stopped investing in research. Only a few European pharmaceutical companies have maintained their policies. The sanctions imposed have led to longer logistics routes, resulting in higher medication costs.

This situation presents an opportunity for Russian and Asian manufacturers to expand their influence in the market. However, many key components for medicines still come from Europe, including packaging materials. Meanwhile, Russia's aging population and declining consumer purchasing power have led to a shift in demand, with cheaper generics replacing mid-range-priced medications. Interestingly, more expensive medicines are in higher demand, largely due to the influence of pharmacists, doctors, and media advertisements.

In addition, there has been an increased demand for homeopathic and antiviral medications, even though their effectiveness remains unproven. The ongoing shortage of foreign-made medicines is expected to be addressed through the production of generics. However, experts warn that although generics share the same active ingredients, differences in manufacturing processes and additional components may impact their effectiveness.

The issue of import substitution remains a critical challenge in Russia, but with effective government policies, the domestic pharmaceutical market can grow without restricting consumer choices.

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