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# THE DEVELOPMENT OF THE PHARMACEUTICAL INDUSTRY: GLOBAL TRENDS AND NATIONAL SPECIFICS OF UZBEKISTAN

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**Abstract**

This thesis examines the development of the pharmaceutical industry in the context of global trends and the national specifics of Uzbekistan. The study analyzes key global transformations, including the growth of biopharmaceuticals, digitalization, increasing R&D intensity, regulatory harmonization, and the diversification of global supply chains. Within this framework, the research explores the structural features of Uzbekistan's pharmaceutical sector, focusing on production capacity, import–export structure, state support measures, localization policies, and investment attraction. Particular attention is given to efforts aimed at reducing import dependence, modernizing manufacturing standards, and strengthening competitiveness.

**Key words**

pharmaceutical industry, global trends, national development, Uzbekistan, biopharmaceuticals, innovation, R&D, localization, import substitution, export potential, regulatory reform, pharmaceutical security, competitiveness, industrial policy.

# РАЗВИТИЕ ФАРМАЦЕВТИЧЕСКОЙ ПРОМЫШЛЕННОСТИ: ГЛОБАЛЬНЫЕ ПРОЦЕССЫ И НАЦИОНАЛЬНЫЕ ОСОБЕННОСТИ УЗБЕКИСТАНА

**Аннотация**

В настоящей статье исследуется развитие фармацевтической промышленности в контексте мировых тенденций и национальной специфики Узбекистана. В работе анализируются ключевые глобальные трансформации, включая рост рынка биофармацевтических препаратов, цифровизацию, повышение наукоёмкости отрасли, гармонизацию нормативно-правового регулирования и диверсификацию глобальных цепочек поставок. В этом контексте рассматриваются структурные особенности фармацевтического сектора Узбекистана с особым вниманием к производственным мощностям, структуре импорта и экспорта, мерам государственной поддержки, политике локализации и привлечению инвестиций. Отдельное внимание уделяется усилиям, направленным на снижение зависимости от импорта, модернизацию стандартов производства и повышение конкурентоспособности.

**Ключевые слова**

фармацевтическая промышленность, мировые тенденции, национальное развитие, Узбекистан, биофармацевтика, инновации, НИОКР, локализация, импортозамещение, экспортный потенциал, регуляторная реформа, лекарственная безопасность, конкурентоспособность, промышленная политика.

## INTRODUCTION

The pharmaceutical industry is a strategically important sector of the global economy, ensuring public health security, technological advancement, and sustainable economic growth. In recent decades, the industry has undergone profound transformation driven by globalization, digitalization, biotechnology innovation, regulatory harmonization, and the growing demand for

accessible and high-quality medicines. This thesis examines the development of the pharmaceutical industry through the lens of global trends and analyzes the national specifics of its evolution in the Republic of Uzbekistan.

The methodological framework of the study combines comparative analysis, statistical data evaluation, policy review, and trend forecasting. By contrasting global pharmaceutical development patterns with the national experience of Uzbekistan, the research identifies both challenges—such as technological gaps, limited R&D funding, and reliance on imported raw materials—and opportunities, including regional market integration, export diversification, and the development of competitive generic production.

The findings contribute to a deeper understanding of how global pharmaceutical transformations influence national industrial policy and highlight strategic directions for strengthening the competitiveness and sustainability of Uzbekistan's pharmaceutical industry. The thesis provides practical recommendations aimed at enhancing innovation capacity, improving regulatory efficiency, expanding export potential, and ensuring long-term pharmaceutical security.

## LITERATURE REVIEW

Many prominent scholars have contributed to the study of the global pharmaceutical industry from perspectives of economics, innovation, regulation, and public health. Below are some of the most influential researchers and their contributions:

William J. Baumol made a significant contribution to the theory of innovation-driven competition in high-technology industries. In his work *The Free-Market Innovation Machine*, he argued that large firms in oligopolistic markets systematically invest in R&D as part of structured, routine innovation processes. This concept is particularly relevant to the pharmaceutical industry, where competition is largely based on research intensity rather than price alone. Baumol emphasized that sustained R&D rivalry among major pharmaceutical companies stimulates continuous product development, incremental innovation, and therapeutic advancement. His framework helps explain why pharmaceutical markets are characterized by high research expenditures, long development cycles, and strong patent dependence.

Iain Cockburn's research centers on pharmaceutical R&D productivity, patent systems, and firm-level innovation performance. He has analyzed the economics of drug discovery, including the determinants of research success and the impact of intellectual property protection on innovation incentives. Cockburn's empirical studies highlight the complexity and uncertainty of pharmaceutical R&D, the high failure rates of clinical trials, and the role of scientific collaboration networks. He also examined how regulatory environments and patent policy influence investment decisions in new drug development. His findings contribute to understanding the balance between innovation incentives and market competition in the global pharmaceutical industry.

Academician Shavkat Salikhov is one of the leading figures in chemical sciences in Uzbekistan. His research in organic chemistry and biologically active compounds contributed to the scientific foundation for the development of new pharmaceutical substances. His work supported the creation of domestic drug formulations and strengthened the scientific base of pharmaceutical production.

## ANALYSIS AND RESULTS

The research-based pharmaceutical industry is one of Europe's major high-technology industrial employers. Recent studies in some countries showed that the research-based pharmaceutical industry generates about three times more employment indirectly – upstream and downstream – than it does directly (PwC, Economic and societal footprint of the pharmaceutical

industry in Europe, November 2024). Furthermore, a significant proportion of these are valuable skilled jobs, for instance in the fields of academia or clinical science, which can help maintain a high-level knowledge base and prevent a European "brain drain".

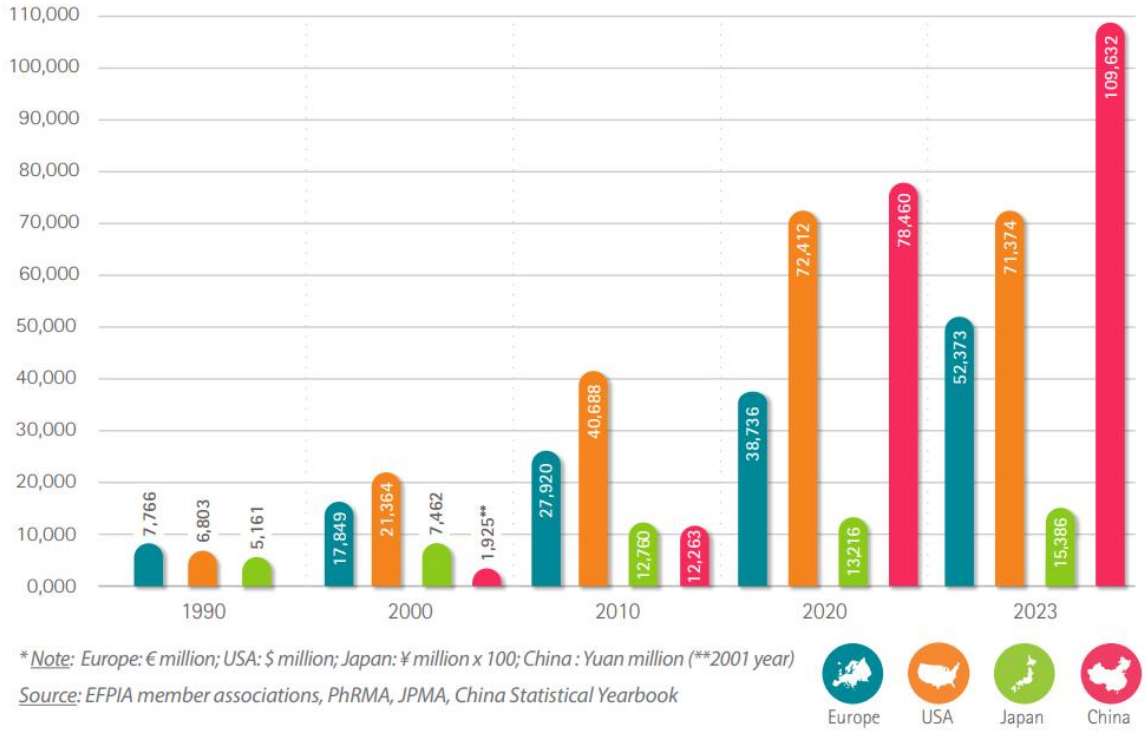


**Figure 1. Pharmaceutical expenditure in Europe, USA, Japan and China (millions of national currency units), 1990-2023**

Note: Europe: € million; USA: $ million; Japan: ¥ million x 100; China: Yuan million (**2001 year) Source: EFPIA member associations, PhRMA, JPMA, China Statistical Yearbook

Uzbekistan has established several specialized industrial parks and free economic zones (FEZs) to support the growth of the pharmaceutical industry.

Uzbekistan has established six pharmaceutical Free Economic Zones (FEZs) in the following regions: Nukus, Zomin, Kosonsoy, Sirdaryo, Boysun, and Bostonlik.

Uzbekistan's pharmaceutical sector is experiencing explosive growth in 2025. In September 2025, the market volume reached $204.9 million (wholesale) with 83.1 million packages of medicines sold. This is 36.4% higher in value terms and 24.1% higher in volume than a year earlier, indicating a recovery in consumer demand and a robust post-pandemic market rebound. The total annual market volume (MAT, the twelve months to September 2025) is estimated at $2.14 billion, whereas in 2018 it was about $0.888 billion. Thus, the average annual growth rate over 2018–2025 exceeded 13.4%, with acceleration in 2024–2025. As a result, the country's pharma market has entered a phase of accelerated development, laying the foundation for further expansion in 2026.

Shift to premium segments. The structure of pharmaceutical consumption in Uzbekistan is shifting towards more expensive medications. The share of the cheapest drugs (priced up to $1 per package) is shrinking, whereas the $1–5 and $5–10 segments are growing. At the same time, the niche of drugs priced above $10 is strengthening, reflecting a shift of part of consumer demand toward branded original medicines and complex therapies. This trend indicates

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qualitative market development: whereas previously inexpensive generics dominated, now an increasing share of revenue comes from innovative and imported products.

**Table 1. PHARMACEUTICAL EXPORTS**

| EFPIA 2023 | € million | | € million |
|---|---|---|---|
| Austria | 16,524 | Latvia | 695 |
| Belgium | 77,879 | Lithuania | 1,085 |
| Bulgaria | 1,269 | Luxembourg | 189 |
| Croatia | 1,125 | Malta | 386 |
| Cyprus | 405 | Netherlands | 56,136 |
| Czech Republic | 4,057 | Norway | 978 |
| Denmark | 21,447 | Poland | 5,915 |
| Estonia | 140 | Portugal | 2,773 |
| Finland | 1,837 | Romania | 1,215 |
| France | 36,130 | Slovakia | 745 |
| Germany | 112,213 | Slovenia | 18,786 |
| Greece | 2,808 | Spain | 21,188 |
| Hungary | 8,728 | Sweden | 13,300 |
| Iceland | 61 | Switzerland | 96,288 |
| Ireland | 77,469 | Turkey | 1,858 |
| Italy | 48,080 | United Kingdom | 29,850 |
| TOTAL | | | 661,559 |

Note: All data based on SITC 54 Source: Eurostat (COMEXT database – April 2025); EFPIA member associations

Imports and local production. Despite localization efforts, the market remains import-dependent – around 90% of sales by value are generated by foreign drugs, with a slight trend toward imports further expanding their share. As of MAT/09/2025, imported medicines have raised their value share from 87% in 2018 to 89%. Nonetheless, in volume terms, the share of local manufacturers has inched up from 40% to 41.2% thanks to the production of affordable generics. Local companies are increasing their presence in the low-price segment by competing on cost. The government is encouraging localization of production, offering incentives (for example, tax and customs benefits in pharmaceutical free economic zones) and reserving 20% of state procurements for domestic companies' products. These measures have already led a number of foreign companies to begin setting up manufacturing in Uzbekistan.

**Table 2. PHARMACEUTICAL IMPORTS**

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| EFPIA 2023 | € million | | € million |
|---|---|---|---|
| Austria | 14,102 | Latvia | 976 |
| Belgium | 68,791 | Lithuania | 1,636 |
| Bulgaria | 2,100 | Luxembourg | 688 |
| Croatia | 1,792 | Malta | 388 |
| Cyprus | 509 | Netherlands | 44,373 |
| Czech Republic | 7,003 | Norway | 2,582 |
| Denmark | 5,449 | Poland | 10,737 |
| Estonia | 753 | Portugal | 3,719 |
| Finland | 2,420 | Romania | 5,152 |
| France | 35,447 | Slovakia | 2,550 |
| Germany | 69,782 | Slovenia | 8,137 |
| Greece | 4,221 | Spain | 22,183 |
| Hungary | 6,505 | Sweden | 6,178 |
| Iceland | 243 | Switzerland | 55,071 |
| Ireland | 12,677 | Turkey | 4,804 |
| Italy | 37,590 | United Kingdom | 29,474 |
| TOTAL | | | 468,032 |

Note: All data based on SITC 54 Source: Eurostat (COMEXT database – April 2025); EFPIA member associations

Uzbekistan's pharmaceutical market is highly fragmented – the combined share of even the largest players is relatively small. According to IQVIA for MAT/09/2025, the top three companies by sales value are Slovenia's KRKA, Turkey's World Medicine, and Ukraine's Farmak. These companies together control about 9.9% of the market, which indicates intense competition and a market crowded with numerous brands and manufacturers. Notably, the top ten manufacturers have collectively increased their share since 2018 from 24% to 27%. Among local manufacturers, the Uzbek company Nika Pharm stands out with roughly a 2.5% share, rising from 32nd position in 2018 to 7th in 2025 with a +40.4% increase in sales (in value terms). Nika Pharm has become the most dynamic player in the domestic market and the only local manufacturer in the top ten.

Competition at the individual brand level is also intense, with the leaders showing explosive growth. According to IQVIA for MAT/09/2025, Viferon (Russia) +46.2%, Rinoxil (Uzbekistan) +34.5%, and Reosorbilact (Ukraine) +63.9% are the best-selling brands in Uzbekistan, and are showing robust growth. The astonishing success of the Uzbek brand Rinoxil is particularly noteworthy – in just five years it not only entered the top ten brands, but even topped the list, overtaking Magne B6, Enterogermina, and other global brands traditionally strong in the CIS. New domestic brands are also growing rapidly – for example, the cold remedy Rinomax (+141.1% year-on-year). Such turnover among leaders reflects the market's flexibility: new drugs can quickly capture a significant share if they meet current demand, and consumer loyalty is gradually shifting toward more effective or well-marketed products.

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In 2025, Uzbekistan is attracting substantial investments into its pharmaceutical sector, confirming the confidence of international investors. According to official data, in just January–August 2025, over $290 million was invested in the industry, of which $262.7 million were foreign investments. Companies from Russia, China, India, Europe, and other regions are involved in these projects. At the IV International Pharmaceutical Congress held in Tashkent in September, more than 20 major projects were presented – from the construction of new plants to the modernization of existing enterprises. The government emphasizes that Uzbekistan offers broad opportunities for expanding production, implementing innovations, and increasing the pharma sector's export potential. The rapid growth of the domestic market and government support measures are creating a favorable climate that attracts foreign capital.

At the same time, the industry faces challenges. An import dependence of 90% leaves it vulnerable to external factors – price fluctuations and supply disruptions. Accelerated localization should be accompanied by knowledge transfer: it is important that foreign partners not only repackage drugs in Uzbekistan but also train personnel and transfer know-how. There is a risk of imbalance – for instance, an excessive orientation toward Chinese standards and technologies without considering EU and U.S. requirements could limit export opportunities. Therefore, a balanced approach is recommended: diversify partnerships (China, India, Russia, EU, etc.), harmonize regulations with internationally recognized norms (ICH, WHO GMP, EMA)[1], and maintain openness to diverse markets. It is necessary to continue investing in workforce training and science, expanding educational programs in collaboration with foreign universities and companies. Developing human capital and R&D will increase the country's ability to create its own innovations and reduce import dependence in the long term.

For foreign investors, Uzbekistan's pharma market now offers a unique combination of fast-growing demand and incentives. It is advisable to capitalize on the favorable investment climate: companies entering this market in 2025–2028 can secure strong positions before competition intensifies. Promising niches for investment include the production of affordable generics (to substitute imports), the introduction of modern biotechnologies (including the production of vaccines, insulins, and other complex drugs where demand is high), and the development of distribution networks in the country.

For the government and industry regulators, the key recommendation is consistency in reforms. The success of measures already adopted (incentives, free economic zones, stricter quality standards) largely depends on their effective implementation. It is essential to ensure that new requirements do not lead to medicine shortages or higher prices – a transition period and support for local manufacturers in obtaining certifications may be needed. Continuing the course of integration with the global community – joining ICH, cooperating with WHO, and active participation in Eurasian and international industry events – will strengthen Uzbekistan's image as a reliable partner. In parallel, export infrastructure should be developed: from certifying drugs to the standards of target markets (EU, CIS, Middle East) to establishing logistics channels and marketing support abroad.

Major exporters of pharmaceutical products to Uzbekistan during the reporting period:

- India - $300.8 million
- China - $290.6 million
- Russia - $145 million
- Ukraine - $86 million
- Germany - $78 million
- Hungary - $74 million

[1] https://timesca.com/uzbekistans-pharmaceutical-market-in-2025-rapid-growth-foreign-investment-and-localization/

- Latvia - $68.5 million
- Turkey - $66 million

The central element of the industry's development strategy is the creation of world-class pharmaceutical clusters. The flagship project is the "Tashkent Pharma Park" innovation cluster near Tashkent, with €1.2 billion in state investment. This large complex of 1.9 million square meters will unite research centers (a biotechnology center and a pharmaceutical technical school/university), modern plants, and logistics infrastructure – all within a free economic zone offering tax incentives.

The volume of Uzbekistan's pharma market ($2.136 billion in MAT/08/2025) has surpassed that of Kazakhstan ($1.391 billion), reflecting Uzbekistan's larger population and growing demand. This strengthens the country's position as the largest pharmaceutical market in Central Asia.

In the context of the broader Central Asian region, just a few years ago, Kazakhstan led in pharmaceutical sales, but Uzbekistan's faster growth has now put it in first place. As of MAT/09/2025, Uzbekistan's retail pharmaceutical market is 54% larger than Kazakhstan's in value terms, with growth over 31%, whereas Kazakhstan's market is stagnating at -2.7%. Although income levels in Kazakhstan are higher, Uzbekistan's population is nearly twice as large, which, along with gradually rising purchasing power, has led to a faster expansion of its pharma market. This underscores Uzbekistan's role as a new regional pharmaceutical hub. The smaller markets of neighboring countries (Kyrgyzstan, Tajikistan, and Turkmenistan) lag far behind in scale, allowing Uzbekistan to become an export center supplying the entire region.

**CONCLUSION.** In conclusion, Uzbekistan's pharmaceutical market in 2025 has demonstrated impressive progress. The combination of internal momentum and external openness has created a unique situation: the sector is growing on almost all fronts – volume, range of products, quality, and investments. If the country maintains its course and continues reforms, it could solidify its role in the coming years as the region's leading pharmaceutical center, capable not only of meeting domestic demand but also of supplying medicines to neighboring states. For international investors, this is a window of opportunity, and for the republic itself, a chance to accelerate economic development, strengthen the healthcare system, and enhance its status on the global pharmaceutical map. The right strategic steps taken today will lay the foundation for the industry's long-term success tomorrow, ensuring a balance between rapid growth and the sustainability of this crucial sector of the economy.

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