

Artificial Intelligence (Ai) In Pharmaceutical Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

Artificial intelligence (AI) in the pharmaceutical market is expected to register a CAGR of 29.46% over the forecast period (2022-2027).

The COVID-19 pandemic has had a substantial impact on the artificial intelligence (AI) in the pharmaceutical market in its initial phase. The strict lockdowns and government regulations for halting or postponing R&D activities, clinical trials, and drug discovery processes to combat the spread of the virus affected the adoption of AI in the pharmaceutical industry. However, as AI technology is used as an important non-medical intervention, it has gained lucrative demand to build next-generation epidemic preparedness. For instance, as per the article titled "Using Artificial Intelligence Technology to Fight COVID-19: A Review," published in January 2022, artificial intelligence technology witnessed a huge demand owing to the increasing use of machine learning to effectively predict COVID-19 infection cases based on media channels and to help doctors improve the efficiency and accuracy of image recognition (X-Ray and Computed Tomography). Artificial intelligence technology was used for sample recognition. Furthermore, the study concluded that the use of artificial intelligence technology to predict and identify symptoms of COVID-19 is an effective preventive measure where AI technology can achieve more than 93% in the prediction of COVID-19, and the accuracy of symptom recognition can reach more than 91%. Such developments within the market are anticipated to boost the demand for AI in the pharmaceutical industry over the pandemic phase.

Additionally, an increasing number of academic and research groups prefer AI tools to identify more precise targeted treatments to fight the COVID-19 pandemic. For instance, as per the article titled "An integrated Artificial Intelligence Model for Efficiency Assessment in Pharmaceutical Companies during the COVID-19 Pandemic" published in January 2022 presented an AI method composed of optimization and machine learning and used data envelopment analysis (DEA) to measure the productivities and efficiencies of pharmaceutical companies during the COVID-19 pandemic. Hence, these emerging applications of AI in the

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pharmaceutical industry are expected to boost the market's growth over the coming years. Thus, the COVID-19 outbreak impacted the market's growth in its preliminary phase; however, the market is expected to gain traction due to the increasing use of AI in several aspects of the pharmaceutical industry.

In addition, factors such as increasing adoption of artificial intelligence for clinical trials, rising use of cloud-based applications & services, and an increasing need to reduce drug discovery and development costs and timelines are the majorly driving the growth of the studied market over the forecast period.

Several companies operating within the market are employing AI to fasten the clinical trial process and reduce the time required for their completion. For instance, in April 2022, Hong Kong-based company Insilico Medicine completed a Phase 0 clinical study and entered a Phase I clinical trial with its anti-fibrotic drug candidate for a novel target discovered using the company's artificial intelligence platform Pharma. AI. The total time from target discovery program initiation to the start of phase I took less than 30 months, representing a new level in therapeutic asset development speed for the pharmaceutical industry. Additionally, in October 2021, Amazon Web Services Inc. (AWS) and Israel Biotech Fund (IBF) launched the AION Labs in Israel, which will allow drug developers to harness artificial intelligence technologies and computational science to solve therapeutic challenges. The launch of this lab was backed by AstraZeneca, Merck, Pfizer, and Teva Pharmaceuticals with their life sciences ecosystem. Therefore, the adoption of AI as an asset to accelerate the drug discovery process is anticipated to increase in the future, thereby driving the growth of the studied market over the forecast period. Therefore, owing to the above-mentioned growth factors, the studied market is anticipated to grow over the forecast period.

However, the lack of skilled professionals and incompatible healthcare IT infrastructure in pharmaceutical research centers are expected to hinder the growth of the market over the forecast period.

Artificial Intelligence In Pharmaceutical Market Trends

Drug Discovery Segment is Expected to Witness Significant Growth Over the Forecast Period

By application, the drug discovery segment is likely to garner a substantial share of the market throughout the analysis period. Drug discovery has gained popularity owing to the rising prevalence of chronic and rare diseases coupled with an upsurge in research and development activities in the pharmaceutical sector. The drug discovery process may require several years for its completion and involves different phases such as target discovery, including target identification and validation, hit generation, and lead identification in its strategic and exploratory research phase. For instance, as per an article titled "An Updated Review of Computer-Aided Drug Design and Its Application to COVID-19," published in June 2021, stated that drug discovery can take up to 10-15 years and can cost around USD 2.5 billion for a company to make its product available in the market. On average, for a new drug to complete the journey from initial discovery to the marketplace, it takes at least ten years, with clinical trials alone taking nearly six to seven years, which significantly consumes time, resources, energy, and costs. However, the use of artificial intelligence in drug discovery has improved and accelerated the entire process, with researchers and major pharmaceutical companies now focusing on the application of artificial intelligence in drug discovery platforms. For instance, in June 2021, Euretos, a company focused on transformation to data-driven disease and drug research, enabled free access to its AI Platform to all academic users. In addition, in January 2022, Sanofi signed a license and research collaboration agreement with Exscientia, a company focused on utilizing the power of AI and human creativity to make safer and more sophisticated drugs. Through this collaboration, Sanofi will develop up to 15 novel small molecule candidates across oncology and immunology indications based on Exscientia's artificial intelligence (AI)-based platform. Hence, such developments undertaken by key players within the market will drive the segment's growth over the forecast period.

Furthermore, the article titled "Artificial intelligence in Drug Discovery and Development," published in January 2021, stated that during drug discovery, the prediction of the toxicity of any drug molecule is vital to avoid toxic effects. Primarily, cell-based in

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vitro assays are often used, followed by animal studies, to identify the toxicity of a compound, which increases the expense of drug discovery. Hence, several web-based tools, such as LimTox, pkCSM, admetSAR, and Toxtree, are now available for the prediction of toxicity and help reduce the overall costs. Also, the abovementioned study stated that advanced AI-based approaches look for similarities among compounds to project the toxicity of the compound based on input features. This increasing research and development in the field of drug discovery, along with the increasing application of AI in different phases, are boosting the growth of the studied segment over the analysis period.

Additionally, the increasing number of clinical trials and fundraisers in the field of drug discovery is likely to have a positive impact on the segment's growth. For instance, Owkin, a French AI start-up, working with its biopharmaceutical partners to identify patients at high-risk levels who might respond best to an experimental drug, raised a fund of a total of USD 70 million in June 2020 as part of a long-running Series A funding round. Therefore, owing to the factors mentioned above, the drug discovery segment is anticipated to grow over the forecast period.

North America is Expected to Dominate the Market Over the Forecast Period

North America is expected to witness substantial growth over the forecast period. Factors such as rising clinical trials, an increasing number of drug discoveries and development coupled with the increasing prevalence of chronic diseases, and technological advancements in the pharmaceutical industry in the region are the major factors driving the growth of the studied market in North America.

Furthermore, the presence of numerous market players and a growing number of cross-industry collaborations and partnerships are majorly impacting the growth of AI in the pharmaceutical market in the United States. For instance, in March 2022, Insilico Medicine, a clinical-stage end-to-end artificial intelligence (AI)-driven drug discovery company, entered into a strategic collaboration with EQRx, a company committed to developing and delivering innovative medicines to patients at radically lower prices. This collaboration will combine Insilico's Pharma.AI platform to advance de novo small molecule design and generation with EQRx's clinical development and commercialization expertise. Likewise, in December 2021, Amazon Web Services, Inc. (AWS) collaborated with Pfizer to create innovative, cloud-based solutions with the potential to improve how new medicines are developed, manufactured, and distributed for testing in clinical trials. Thus, owing to continuous strategic activities undertaken by major players, the growth of the market is expected to augment over the forecast period in the United States.

Additionally, scientists in the National Cancer Institute (NCI) intramural research program are supporting the capabilities of AI to improve cancer screening in cervical and prostate cancer. The NCI investigators have also developed a deep learning approach for the automated detection of precancerous cervical lesions from digital images. These emerging applications of AI in oncology in the country are poised to drive the growth of the studied market in the country.

Thus, owing to the aforementioned factors, the North American region is expected to have significant growth over the forecast period.

Artificial Intelligence In Pharmaceutical Market Competitor Analysis

In the current scenario, the artificial intelligence (AI) in the pharmaceutical market comprises global players focusing on gaining a point of difference in a competitive market space. In addition, new entrants have emerged recently and are gaining traction in the market. Overall, the competitive rivalry within the industry is expected to be high during the forecast period. Some of the major players studied are Alphabet Inc., Atomwise, Inc., BenevolentAI, Biosymetrics, Cloud Pharmaceuticals, Inc., Deep Genomics, Euretos, Exscientia, IBM Corporation, Insilico Medicine, Microsoft Corporation, and NVIDIA Corporation, among others.

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Table of Contents:

1 INTRODUCTION

- 1.1 Study Assumptions and Market Definition
- 1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET DYNAMICS

- 4.1 Market Overview
- 4.2 Market Drivers
 - 4.2.1 Growing Number of Cross-industry Collaborations and Partnerships
 - 4.2.2 Surge In Adoption of Artificial Intelligence (AI) for Clinical Trials
 - 4.2.3 Increasing Need to Reduce Drug Discovery & Development Costs and Timelines
- 4.3 Market Restraints
 - 4.3.1 Inadequate Availability of Skilled Professionals
 - 4.3.2 Incompatible Healthcare IT Infrastructure
- 4.4 Porter's Five Forces Analysis
 - 4.4.1 Threat of New Entrants
 - 4.4.2 Bargaining Power of Buyers/Consumers
 - 4.4.3 Bargaining Power of Suppliers
 - 4.4.4 Threat of Substitute Products
 - 4.4.5 Intensity of Competitive Rivalry

5 MARKET SEGMENTATION (Market Size by Value - USD million)

- 5.1 By Technology
 - 5.1.1 Machine Learning
 - 5.1.2 Other Technologies
- 5.2 By Type
 - 5.2.1 Software
 - 5.2.2 Services
- 5.3 By Application
 - 5.3.1 Drug Discovery
 - 5.3.2 Clinical Trial
 - 5.3.3 Laboratory Automation
 - 5.3.4 Others
- 5.4 Geography
 - 5.4.1 North America
 - 5.4.1.1 United States
 - 5.4.1.2 Canada
 - 5.4.1.3 Mexico
 - 5.4.2 Europe

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- 5.4.2.1 Germany
- 5.4.2.2 United Kingdom
- 5.4.2.3 France
- 5.4.2.4 Italy
- 5.4.2.5 Spain
- 5.4.2.6 Rest of Europe
- 5.4.3 Asia-Pacific
 - 5.4.3.1 China
 - 5.4.3.2 Japan
 - 5.4.3.3 India
 - 5.4.3.4 Australia
 - 5.4.3.5 South Korea
 - 5.4.3.6 Rest of Asia-Pacific
- 5.4.4 Middle East
 - 5.4.4.1 GCC
 - 5.4.4.2 South Africa
 - 5.4.4.3 Rest of Middle East
- 5.4.5 South America
 - 5.4.5.1 Brazil
 - 5.4.5.2 Argentina
 - 5.4.5.3 Rest of South America

6 COMPETITIVE LANDSCAPE

- 6.1 Company Profiles
 - 6.1.1 Alphabet Inc. (Isomorphic Laboratories)
 - 6.1.2 BenevolentAI
 - 6.1.3 XtalPi Inc.
 - 6.1.4 Cloud Pharmaceuticals, Inc.
 - 6.1.5 Deep Genomics
 - 6.1.6 Euretos
 - 6.1.7 Exscientia
 - 6.1.8 IBM Corporation
 - 6.1.9 Insilico Medicine
 - 6.1.10 NVIDIA Corporation

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

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