Is Pharma Adopting AI Quickly Enough?

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Use of Artificial intelligence is growing rapidly. Some of the world's largest industries are using AI as frequently as any other business tool. Still, there are industries which seem to be more risk averse. Pharma integrates AI at the rate of 31% in the service operations sector, 31% in the product/service development sector, and 27% in the marketing sector. Does that mean that pharma is lagging in implementing AI?

While AI integration is beneficial for business, there are several reasons why the process is somehow slower in the pharma industry than in other industries.

1. Handling of Sensitive Data

In the tech industry, most data is collected from search engines, while pharma collects personal data. Moreover, much of that data is highly sensitive, such as histories of disease, health data, DNA information, *etc.* In addition to the GDPR, many countries have special rules on processing of genetic data. This has proven to be a great regulatory burden for the pharma companies.

2. Risks from Technical Malfunctions

Pharmaceutical companies spend around 15% of their revenues on R&D. If we compare this to other industries, pharma outspends industries like military and aviation (both of which spend around 3% of revenues on R&D) by a five-to-one ratio. Developing a new product on which human lives depend is a risky process. Integrating AI into that process can save money and time, but an error or a glitch could cost human lives and millions of dollars.

3. Complexity of Data Leads to the Complexity of the AI System

The business community has passed through the first and second phase of AI development, and is currently entering the third phase. What does this mean? First-phase AI was good at reasoning, but with no ability to learn or generalize; second-phase AI was good at learning and perceiving, but had minimal ability to generalize or reason; the third phase – the one we're entering now – includes AI that has excellent learning, reasoning, and perceptive abilities and average abilities to generalize. Pharma depends on the AI's ability to generalize and reason with huge amounts of unstructured biological data. A lot of time is still spent structuring data before it is input so that the AI is able to process it. With the development of third-phase AI, and later fourth-phase AI, the availability of adequate AI for the pharma industry will increase.

AI and Pharma

There are several areas in the pharma industry into which AI could be integrated, including R&D, the processing of clinical data, individualizing treatments, and complex or rare diseases.

How does AI integrate in pharma R&D currently? Only segments of the R&D process are given over to the AI, and this is still aided by human analysis. This minimizes the risk of error, while still saving time and money.

AI can also be used to make sense of the huge amount of data that pharma companies receive. AI can notice patterns in disease behaviour, occurrence, and treatment from thousands of patients in relatively short periods. This is one of the more promising sectors of the pharmaceutical industry for AI use, yet this is also the sector which is hit most by the GDPR.

AI can play a significant role in individualizing treatments for patients. AI can process and analyze a patient's history faster, better, and more precisely than a human mind. Remote patient monitoring also plays a key role in this sector. Using remote monitoring, a patient can go about his or her daily routine, and AI will collect personal health data and adjust the treatment plan at a moment's notice.

The costs of discovering, monitoring, and treating complex or rare diseases can be drastically decreased with AI.

Pharma is adapting AI as quickly as it can. Pharma-specific risks involved with incorporating AI and pharma-specific required levels of AI complexity are higher than in other industries. AI with good enough reasoning and generalization skills has been developed only recently, and the regulatory burden is greater than in most other industries. So, what can be done to speed up the integration of AI into the pharma business?

The answer lies in collaboration with tech companies, involving mutual agreements or the acquisition of tech companies with developed AI systems. Increased collaboration with academia, through research and development agreements with universities or institutes, would also lead to quicker and easier adaptation of AI into the pharmaceutical industry.

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