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Pharma R&D: Taking the digital route

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As technologies become more sophisticated by the day, the global pharmaceutical industry has been shoring up their R&D capabilities



Drug development is considered one of the most critical engines that drives the growth story of pharmaceutical industry. Emerging technologies like artificial intelligence and machine learning, combined with data-reliant predictive analyses, are expected to transform the way pharmaceutical research is done. The penetration and adoption of digital innovations are truly altering the R&D operational models.

Digital revolution: Pacing it up

As technologies become more sophisticated by the day, the global pharmaceutical industry has been shoring up their R&D capabilities through steady inflow of investments and resource developments, especially in emerging markets in the Asia Pacific region. In fact, in India, Novartis has a digital hub called Biome India, which is aimed at establishing a network between Novartis and external partners from across the digital ecosystem. This is the first such hub in Asia and owing to India's technological capabilities, we have great opportunities to provide patients with digital led solutions. Clearly, there is a digital revolution on the horizon and countries are keenly embracing it to stay ahead of the curve.

Digital in pharma R&D

Consider this: Pharmaceutical research is a high-cost endeavour, costing the industry billions of dollars in drug development research. In contrast, the innovation progress is slow and the introduction of new molecular entities is low. One solution, and possibly a game-changer in pharmaceutical research, is the potential for mining and processing health-data assets such as molecular pathways, DNA mutations, and gene expression, with the help of cutting-edge technologies. The opportunity to combine ever-growing data sources, increasing digital power, and evolving technological sophistication of service providers makes way for a compelling R&D strategy for pharma companies.

Health-specific data is one of the biggest assets of the pharmaceutical industry and healthcare sector, holding immense amounts of information for profiling numerous diseases and unmet medical needs, candidate molecules and patient populations. With the integrated predictive analytics available today, this data can be used for generating invaluable clinical insights to tackle various disease burdens with novel strategic approaches. By assessing and organising this data into structured as well as unstructured datasets, it can be analysed by artificial intelligence and machine learning algorithms to uncover complex patterns. At the same time, by evaluating this data, we can also increase our understanding of how to gather datasets from clinical trials in a better manner.

To give some perspective of the immense potential, in Asia Pacific (APAC), spending on augmented reality (AR) and virtual reality (VR) was $7.5 billion in 2019, according to IDC Worldwide Semiannual Augmented and Virtual Reality Spending Guide. The purpose of this investment is to ensure that companies are better able to communicate new clinical data and use this data for accurate analysis. Again, the Novartis innovation lab in Hyderabad, India is working with external partners to enable rapid 'proof of concept' digital solutions. One example of this is the mixed reality solution to troubleshoot in real time problems in the R&D labs by experts located anywhere in the world which is being developed to improve cycle time and quality of laboratory activities.

Emerging markets which are supported by effective digital ecosystems are implementing innovative technologies for pharmaceutical research with greater efficacy. Consequently, with the increase in the adoption of analytics and automation tools, there is a greater need for talent that can programme and analyse data from these new technologies. It only adds value that countries in the APAC region are home to an immense talent pool, not only in biosciences but also in computer sciences and data analytics. Such advantage will allow for quicker adoption of big data technologies, by integrating with the existing frameworks offered by leading pharmaceutical companies, and even building new ones.

Post pandemic: Shifting industry's focus

Since last year, pharma industry has had to prioritise critical R&D efforts and essential projects in the drug development pipeline, which was also supported by guidelines from regulatory authorities. The disease landscape is certainly changing and the industry's emphasis will be on accelerating the product pipeline to respond to this evolving situation. This means that failures will have to be detected sooner and greater accuracy of targeting will become critical. Here, the use of digital tools will become core enablers for us to gain access to real-time information on clinical trials helping us enhance our understanding of both the efficacy and accuracy of a potential product as well as its side effects.

Evidently, we are going to be in a different place than before this pandemic and the pandemic has accelerated adoption of digital technologies across the board. Today, the nice-to-have digital tools have become imperatives not only for better patient outcomes but also for long-term business success. What is required for us as an industry is not just to accept digital as a simple combination of individual tools but as the silver bullet to reinvent ourselves.

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