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A smarter way to find new drugs

The pharma sector needs to embrace emerging technologies like Big Data analytics and cloud computing

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What is the secret sauce of accelerating innovation when it comes to critical areas such as drug discovery, personalised medicines or simulated healthcare? Embracing continual innovation was always an imperative for the life sciences companies to stay relevant, and stay alive. This is not just confined to the new drug discovery team within the company, it spans the entire value chain of the innovation ecosystem. The question is whether enough is being done to drive R&D innovation in the pharmaceutical industry.

And we cannot find the answers in silos. A cross-pollination of ideas across the ecosystem is vital as pharmaceutical companies are caught in the conundrum of navigating an increasingly complex global environment driven by competing market and consumer pressures, regulatory changes and a constant need for life-saving innovations.

Pressure on R&D

The truth is with investors getting wary, the price of drugs being perceived as high, and regulatory compliance getting increasingly stringent, R&D productivity is under tremendous pressure. Added to this, the introduction of innovative drugs has hit a slow track.

What compounds the woes is a high failure rate. Of every 5,000 projects, only one completes the drug development process and only one in five of these actually returns its R&D investment.

The time from drug discovery to approval can take up to 15 years; the average cost of bringing a pharmaceutical product to the market is $800 million and growing. The key to reducing costs lies in compressing the discovery cycle by eliminating redundant research and identifying new business models.

To sail smart in the new normal and thrive, pharmaceutical companies must tap emerging technologies such as big data analytics and cloud to streamline their IT operations and deliver safer and affordable healthcare for all. Advanced analytics, mathematical modelling and simulation tools and machine-based discovery technologies, enable enterprises to mine terabytes of data, uncover innovation opportunities and predict the most profitable research outcomes.

In addition to reducing cost, the optimal usage of such technologies can help save millions of lives and improve patient outcomes.

Disruptive technology

The good news is that with rising healthcare costs becoming a key constraint, enterprises, practitioners and policymakers are keen on exploring disruptive technologies to help solve critical, healthcare challenges.

For instance, a novel cloud-based clinical trial supply management solution helps life sciences companies significantly enhance efficiency of clinical trial processes by driving greater collaboration between pharmaceutical companies and contract research organisations.

Besides improving the productivity of the overall drug development process, this ensures timely and accurate supply of drugs to patients at reduced costs. As a result, enterprises can price products competitively while adhering to the stringent standards required to bring products safely to consumers.

End-to-end solutions Big Data push to research IN GREEN/SHUTTERSTOCK.COM

Likewise, Big Data promises smarter healthcare — a paradigm shift from corrective to preventive medicine and personalised medicine, as silos of disparate information gives way to novel actionable insights for medicos.

With sophisticated data analytics technologies, machine learning software can point to abnormalities and predict health issues while smartphones and "iAnythings" are empowering the patient to monitor his health. As doctors rely on such technology for diagnosis and decision-making, there is a marked improvement in procedure performance, decreased healthcare costs, and improved patient-centric care.

Indeed, the emergence of advanced simulation technologies is proving a boon for better diagnosing osteoporosis and accurately quantifying fracture risk. This provides medical practitioners with a new, comprehensive and non-invasive way to examine individual bones and skeletal structure, and determine the best course of action.

Better understanding

For instance, 3D models simulating the working of the human heart offers medical professionals and scientists a near real-life scenario to improve understanding of the complexities of human heart disorders. The model simulates the heart's functioning, in particular the deformation of heart tissues due to certain stress conditions.

While this helps medical professionals diagnose heart disorders faster and with a higher level of precision, it enables medical device manufacturers test and validate implants to detect and quickly correct anomalies. This is expected to lead to better-designed medical devices, faster regulatory and compliance approval, and improved time-to-market for those devices.

Promoting new life science technologies would require companies to forge a strong partnership across scientists, researchers and local communities — a collaboration rooted in transparency, clear guidelines for intellectual property and, most importantly, a patient-centric mindset.

Towards collaboration

For effective collaboration, data standardisation, integration and interoperability are vital. And information management, an important area on which pharmaceutical companies need to focus.

For instance, the entire clinical development process generates an enormous amount of data which is not efficiently used. If this information is integrated with that from the discovery phase and other studies, companies can garner insights that could result in new drugs or help avoid costly failures.

Making the clinical trial data available to all can accelerate the innovation trajectory and establish a stronger research foundation for the industry. While it requires an unwavering focus on future-oriented life-saving drugs and tech-enabled innovations to accelerate growth, the pharmaceutical industry must address drug prices and price discrepancies across regions.

Significantly, innovation thrives at the intersection of open collaboration amongst all the stakeholders including industry, academia, regulators, policymakers, government and investors. However, at the core of it remains a focus on patient-centric solutions to create a healthy economy and a pink planet.

The writer is the CEO of EdgeVerve Systems