AI-powered portfolio decisions

FEBRUARY 2024

ARTICLE

Evaluate
a norstella company

AI-powered portfolio decisions

BY MELANIE SENIOR

Artificial intelligence has taken centre stage across healthcare.

It lays claim to a revolution in care delivery, to turbo-charged health data collection and analysis, and may even generate brand new drugs. Big Pharma continues to buy in. Sanofi's multi-deal splurge includes, most recently, a generative AI small molecule maker. Roche-owned Genentech's ambitious long-term plan to re-invent R&D with machine learning (and chip giant Nvidia) is another example of AI's grip on biopharma.

Another AI-based transformation is underway within business operations. It may be less eye-catching than health-bots or computer-generated medicines, but its impact on R&D efficiency may rival or surpass those novelties.

PHARMA EXECS' NEW BEST FRIEND

Pharma execs are touting a cool new tool in their pockets: AI-powered decision-making apps. Sanofi CEO Paul Hudson claims to have made a Phase 3 go/no-go decision based on one; Janssen's global R&D strategy chief Najat Khan was singing the app's praises at Bio-Europe in Munich late last year.

Both companies have teamed up with three-year old Aily Labs to develop the tool, which aggregates swathes of internal and external data, applies machine learning algorithms, and churns out easy-to-read stats, graphs and charts. The output covers everything from project costs and timings, progress against key performance indicators and supply constraints, to success probabilities and commercial risk scores.

All the core information that feeds into these platforms – competitive intelligence, trial site stats, scientific publications or investors' deals data – was previously available. But it wasn't easy to access or visualise in a useful way, nor was it always up-to-date. And, like most other Big Pharma, Sanofi was behind on basic company-wide data integration and connectivity. Large organisations are too silo-ed to fully leverage AI-powered data-handling, says Aily founder Bianca Anghelina, previously head of Global Digital Finance at Novartis. Aily's goal is to connect and interpret firms' cross-functional data to help them solve business problems.

Those problems may be current – or they may be future issues, still invisible to humans but already apparent in the data. Aily's tool "trains on internal and external data to predict the future," says Anghelina.

And that – predictive analytics – is what's new about Sanofi's app – dubbed 'plai' – says Helen Merianos, head of R&D portfolio strategy. The algorithm's forecasting power, fuelled by huge volumes of real data, enables "smarter conversations and better questions" among R&D execs, while the tool's real-time nature brings a "radical transparency" to data and investment decisions. Users can see the value of a given project (or of the entire portfolio) at any moment, investigate what factors might be driving changes in that value, and be "more current in understanding what's going on."

The app also tells users what could have happened if different decisions were made along the way. It puts concrete numbers on 'what-if' scenarios, some of which may never have been countenanced in the pre-app era: "What if we increased the number of sites on this study? Would that allow us to be first to market, and, if so, what would that additional speed be worth?"

All of this drives faster and better portfolio prioritisation decisions, according to Hudson and Merianos.

The jury is still out, though. Few argue with the benefits of more accessible, clearer data. But as with other digital tools, there's a risk of distraction: how many scenarios to explore, and how to avoid being paralysed by daily or even hourly variations in any given stat? And to what extent should newer metrics such as "scientific impact" – how exciting a project is perceived to be externally – influence R&D decisions?

> Users can see the value of a given project (or of the entire portfolio) at any moment, investigate what factors might be driving changes in that value, and be "more current in understanding what's going on."

Those questions require an understanding of data and its nuances, and of what the compelling statistic or trend line beaming from the phone's screen can – or can't – tell you. It's one of the challenges accompanying the biopharma sector's digital

evolution: the need to be bilingual. “We need people who speak both ‘science’ and ‘data science’,” says Nahjat, who is also Janssen’s chief data science officer. These dual language skills are key to unlocking the full value of the expanding interface between medicine and data-science.

Finding such linguists is difficult. Everyone else is also looking for them, and many are building their own future unicorns. Other cultural hurdles will arise as C-suites turn increasingly to their phones, whose voices are, allegedly, free of prejudice or emotion. “You can’t fight data,” Hudson proclaimed during an investor event in late 2023. Some employees will feel threatened by a ‘data-first’ approach that they don’t fully understand – and that they don’t feel reflects their experience. There is an aggressive side to this ‘radical transparency’ – even though it may make business sense.

Is the Aily-powered app getting it right? The 15% fall in Sanofi’s share price following management’s choices at the end of 2023 – announced during third quarter results – suggests that it isn’t quite yet on mark. Lower forecast earnings and a new round of cost cuts seemed to spook markets. (Though it is odd that a promised increase in R&D investment and sale of the consumer division were seen as negative.)

Still, these apps learn. And they do so faster and more methodically than human decision-makers. Information on choices that were made, and what happened, is fed back into the system to improve future output. (Presumably the financial market’s sometimes unpredictable reactions will also feed back in.)

Scoring these platforms may be impossible: so many variables, and so few counterfactuals, will play out in real life. AI hasn’t yet replaced all R&D experiments, predicted future scientific breakthroughs or flagged up newer uncertainties like the Inflation Reduction Act. (See Evaluate’s World Preview report). AI-powered drug discovery is not fully up-and-running either; several setbacks were announced last year.

So far, AI’s biggest impact in pharma has been on clinical trial operations, patient recruitment rates and diversity, says Nahjat. All the digital gurus acknowledge that there’s much further to go in pharma’s AI-powered transformation, in terms of data supply, model quality and – most significantly – changing ways of working. These transformations take time, especially across large, highly regulated and often conservative Big Pharma firms, each at different stages in their journey. (Novartis launched its ‘Nerve Live’ clinical trial monitoring centre in 2018 and partnered with Microsoft the following year to infuse AI into its workers’ desktops.)

But they are transformations that must happen. “I want to improve at speed, break down silos and make better decisions, faster,” says Sanofi’s Hudson. Embracing the Aily app doesn’t mean firing human clinical and R&D oversight teams. But jobs will change. “In some cases, AI will replace what people are doing. In other cases, it will make them smarter and help them do their jobs better,” says Merianos. AI will “fundamentally change how we run our business overall.”

All the digital gurus acknowledge that there’s much further to go in pharma’s AI-powered transformation, in terms of data supply, model quality and – most significantly – changing ways of working.

BIOTECH VCS, TOO, SEEK AI UPGRADE

Some biotech investors are undergoing a similar transformation.

"Sofinnova.AI" is helping Paris-based venture capital firm Sofinnova Partners connect decades of in-house expertise and public data to reveal investment leads that traditional low-tech approaches would likely miss. The ChatGPT-like platform has already surprised, says chairman and managing partner Antoine Papiernik. Examples: Nijmegen, Netherlands' top score in translatable Parkinson's Disease research, and star scientists hidden in the small Irish city of Limerick. "It's shedding light on things we'd never otherwise have seen," he says.

Sofinnova's AI engine – unlike Aily's app – is overlaid with a large language model (LLM) that allows users to query data, ChatGPT-like. Yet "it doesn't try to infer," says Papiernik, "it just looks at data, real-time, an un-biased manner" – free of filters such as a given investor's pet interest, or who else happens to attend a partnering conference. The idea is for this objective, data-centric platform to help Sofinnova predict emerging scientific trends and upcoming innovators faster and more accurately than its competitors.

Like the pharma execs with their pocket decision-makers, Papiernik is optimistic about Sofinnova.AI's potential to super-charge investments and portfolio growth. "I'm certain we'll make better decisions going forward," he says.

Papiernik says they've ensured the system sticks to facts; a dedicated team of data scientists and AI experts have spent the past four years crafting the platform.

There remain unanswered questions. Should Sofinnova's investment team believe Sofinnova.AI if its conclusions conflict with those from their human network? Can they be sure it doesn't 'hallucinate' – offer plausible, yet incorrect answers, as ChatGPT is known to do?

Papiernik says they've ensured the system sticks to facts; a dedicated team of data scientists and AI experts have spent the past four years crafting the platform. But he doesn't deny there's more to do. "This will never be a finished product. We're just at the beginning of the process."

If Sofinnova.AI does help more efficiently spot and evaluate opportunities, Sofinnova's team hopes to devote more of their human intelligence to developing relationships with entrepreneurs. They've recently welcomed a new group of such pioneers, with a new $200 million fund devoted to those working at the digital-medicine interface. The fund, announced in October 2023, has already invested in five start-ups combining biology, data and computation.

Evaluate

a norstella company

Evaluate provides trusted commercial intelligence for the pharmaceutical industry. We help our clients to refine and transform their understanding of the past, present and future of the global pharmaceutical market to drive better decisions. When you partner with Evaluate, our constantly expanding solutions and our transparent methodologies and datasets are instantly at your disposal, along with personalised, expert support.

Evaluate gives you the time and confidence to turn understanding into insight, and insight into action.

Evaluate Pharma offers a global view of the pharmaceutical market's past, present and future performance with best-in-class consensus forecasts to 2028, unique broker forecasts, and the application of proprietary methodologies to support highly robust, detailed and accurate analysis.

Evaluate Omnium provides a complete, dynamic view of development risk and commercial return across all phases of the clinical lifecycle – including early-phase and privately-developed drugs not covered by analysts' forecasts. With product-specific data including Predicted Peak Sales, Probability of Technical and Regulatory Success (PTRS), R&D Costs, Net Present Value, Time-to-Peak and more, Evaluate Omnium makes it easier than ever to quantify and compare risk and return across the full pipeline landscape.

Evaluate Epi is curated by epidemiology experts and delivers comprehensive, global epidemiological data in granular detail, on a highly interrogatable platform. Customers have access to impartial data for 15 therapeutic areas, and over 230 indications and 9,500 sub-populations across 27 core markets (up to 49 for some countries).

Evaluate Medtech provides a transparent and trusted source of market intelligence and consensus forecasting for the global medical device and diagnostic landscape, using the same proprietary methodologies as Evaluate Pharma. Customers can quickly understand how the market views products and portfolios – and where their opportunities, risks and priorities lie.

Evaluate Consulting & Analytics are specialists in solving unique and complex biopharma pipeline, portfolio and commercialisation challenges with best-in-class datasets, powerful analytical capabilities, and deep therapy and commercialisation expertise.

www.evaluate.com | **@EvaluatePharma**

Evaluate Headquarters
Evaluate Ltd.
3 More London
London SE1 2RE
United Kingdom
T +44 (0)20 7377 0800

Evaluate Americas
EvaluatePharma USA Inc.
265 Franklin, Suite 1101
Boston, MA 02109
USA
T +1 617 573 9450

Evaluate Asia Pacific
Evaluate Japan KK
Shin Marunouchi Center Building 16F
1-6-2 Marunouchi, Chiyoda-ku, Tokyo
Japan, 100-0005
T +81 (0)80 1164 4754