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IBM's Retreat From Watson Highlights Broader AI Struggles in Health

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8-10 minutes

The feat was supposed to herald a shift in the way machines served up answers to questions big and small, opening up new revenue streams for Big Blue specifically and Big Tech more generally. A key target: healthcare, a trillion-dollar industry many say is saddled with inefficiencies that some tech advocates say AI could cure.

A decade later, reality has fallen short of that promise. IBM is now exploring the sale of Watson Health, a unit whose marquee product was supposed to help doctors diagnose and cure cancer.

IBM spent several billion dollars on acquisitions to build up Watson. Former senior IBM executive John Kelly once touted the initiative as a "bet the ranch" move. It didn't live up to the hype. Watson Health has struggled for market share in the U.S. and abroad and currently isn't profitable.

Alphabet Inc.'s GOOG -1.45% Google DeepMind unit, which famously developed a Go-playing algorithm that vanquished a champion human player in 2016, later launched several healthcare-related initiatives focused on chronic conditions. It also

has lost money in recent years and run into privacy concerns over how health data was being collected.

The stumbles highlight the challenges of attempting to apply AI to treating complex medical conditions, healthcare experts said. The hurdles include human, financial and technological barriers, they said. Having access to data that represents patient populations broadly has been a challenge, the experts say, as have gaps in knowledge about complex diseases whose outcomes often depend on many factors that may not be fully captured in clinical databases.

Tech companies also sometimes lack deep expertise in how healthcare works, adding to the challenge of implementing AI in patient settings, according to Thomas J. Fuchs, Mount Sinai Health System's dean of artificial intelligence and human health.

"You truly have to understand the clinical workflow in the trenches," he said. "You have to understand where you can insert AI and where it can be helpful" without slowing things down in the clinic.

IBM computer Watson beat Ken Jennings, left, and Brad Rutter to the buzzer to answer a question during a practice round of 'Jeopardy' in 2011.

Photo: Seth Wenig/Associated Press

For IBM, the retreat underscores the difficulties new CEO Arvind Krishna faces in restoring growth at the iconic tech company. Mr. Krishna has said AI, along with cloud-computing, would be pivotal for IBM's prospects.

Watson Health was one of IBM's first and the largest AI efforts, said Toni Sacconaghi, an analyst at Bernstein Research. IBM initially promoted it as an engine for growth, but more recently has given it less prominence amid mounting business struggles, leadership changes and layoffs, he said.

"Watson may be very emblematic of a broader issue at IBM of taking good science and finding a way to make it commercially relevant," Mr. Sacconaghi said.

Even as Watson Health ran into problems, the company's research arm has continued to give priority to AI and healthcare. IBM Research and Pfizer developed speech tests last year to predict the onset of Alzheimer's disease, the company said last year.

IBM wouldn't comment about the sale, but said Watson Health has had successes over the years. "This work began nearly 10 years ago, at the beginning of the AI revolution, and we explored groundbreaking space in helping physicians advance healthcare through AI," the company said. "IBM is continuing to evolve the Watson Health business, based on our decade of experience, to

meet the needs of patients and physicians."

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A sale would mark Mr. Krishna's second major move to exit struggling businesses in less than a year at the helm. IBM last year said it planned to spin off its managed IT services division, which generated about $19 billion of annual revenue, or about a quarter of its total sales.

By slimming IBM down, Mr. Krishna expects IBM to deliver consistent mid-single-digit growth following a decade filled with revenue declines. IBM had $73.6 billion in sales last year, down from almost $100 billion in 2010.

IBM's climb down also serves as a warning to the wider tech industry that sees healthcare as a promising growth market. Watson Health and some other tech-industry AI projects that have struggled were overly ambitious, trying to answer broad, complicated health-related questions, experts said. Watson Health, for instance, was marketed broadly as finding answers to all kinds of cancer, they said.

"When the notion is, 'Well, we can answer any question in cancer care with this data,' it's too overwhelming. We don't have the power to do that right now," said David Agus, the chief executive of the Ellison Institute for Transformative Medicine at the University of Southern California and an early tester of the Watson system.

Another challenge is the lack of data-collection standards, which

makes taking an algorithm that was developed in one setting and applying it in others difficult, experts said. “The customization problem is severe in healthcare,” said Andrew Ng, an AI expert and CEO of startup Landing AI, based in Palo Alto, Calif.

The most successful applications of AI in healthcare to date have been when the technology aims to solve discrete and narrow problems, according to Cynthia Burghard, research director at IDC Health Insights, a technology market research and advisory services firm. Such applications include alert systems that warn doctors which of their patients might be at risk for readmissions or severe outcomes and chatbots that help answer basic questions.

Recently, some healthcare providers and insurers also have married different data sources, including medical history and income-related information, to come up with risk scores for patients to identify those potentially more vulnerable to Covid-19 exposure to target outreach to them, she said. Such applications are easier to manage because they don’t involve diagnoses.

Other areas where AI has seen some successes include radiology and pathology, disciplines where image-recognition software can be applied to answer specific questions, experts said.

“It’s about incremental improvements. It’s not about solving the most complex things in healthcare,” she said. “We might get there someday, but [right now] it’s crawl, walk, run.”

Another area where the technology has had inroads is in streamlining business processes, like billing and charting, rather than in making diagnoses, experts said, because the stakes are lower, and there is better data to make these systems work. There are also clear financial incentives, they said.

“There’s a lot of human capital invested in these things, and a lot of that could be markedly reduced with AI support.” said Eric Topol, a cardiologist and executive vice president at Scripps Research.

Despite the challenges of applying AI in healthcare, experts said they expect investments to continue.

“The market size is infinite,” said USC’s Dr. Agus. “Healthcare is probably a trillion-dollar market and it’s probably 40% to 60% inefficient. So the notion that you can make it dramatically better with something as elegant as a machine-learning algorithm, or AI, which is scalable, obviously is very enticing.”

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