

Life Sciences Practice

Rewired pharma companies will win in the digital age

Despite progress, most pharma companies have not fully rewired their tech, tools, and operating models to realize their digital and analytics ambitions. Five actions can help them achieve scale.

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Virtually every pharmaceutical company recognizes the importance of digital technology to its business and has digital and analytics initiatives underway. Many firms now appoint dedicated chief digital and technology officers (CDTOs), experienced in leading such transformations, to head up their efforts. Leading players are incorporating digital and analytics into early-stage drug discovery and clinical development to shrink timelines and improve the probability of success. Many have also begun to reinvent their interactions with healthcare providers and patients, using technology to enhance and tailor experiences that achieve better treatment outcomes.

Still, as observed in McKinsey's 2022 review of the industry, pharmaceutical companies have only scratched the surface. Siloed use cases and impact stories abound, but investments have rarely led to profound organizational changes. Few have yet succeeded in deeply embedding digital and analytics throughout their organizations. Executives are growing frustrated by the lack of broader, transformational impact.

There is a way forward. McKinsey has examined companies that have successfully scaled their digital and analytics pilots into large-scale delivery and transformation with substantial bottom-line impact. That analysis suggests five proven actions pharmaceutical CEOs and CDTOs can take to advance from small-scale experimentation to industrialization of digital and analytics in the next 12 to 18 months.

Action 1: Rethink operating models and reorient around outcomes

Companies that have begun to accrue large-scale transformational change from their digital and analytics investments have shifted to product- and platform-oriented operating models. This reallocation of resources empowers and equips high-performing, cross-functional, and autonomous teams to work continuously toward specific overarching goals rather than individual products.

Companies that are effective in making this shift structure their organizations around business outcomes and users—organizing cross-functional teams against parts of the patient or healthcare provider experience, for example—rather than around discrete technologies such as mobile apps or chatbots. Product and platform-oriented operating models have been shown to better orient cross-functional teams around desired impact and tend to result in fewer hand-offs, greater productivity, faster time to market, and improved user experiences. A forthcoming McKinsey survey of more than 50 product teams found that this way of working improves delivery speed and employee satisfaction by an average of 20 percent and customer satisfaction by 15 percent.

Early adopters of the approach have realized significant value as they reorient from delivering projects to delivering business results. A large global pharma company, for example, replaced a siloed approach to developing and delivering technology projects with cross-functional teams that were aligned around outcomes and empowered to pursue those outcomes as they saw fit. The new operating model reduced testing time by 50 percent, improved product delivery speed by more than 20 percent, and boosted customer satisfaction by 50 points in some cases. It also created the foundation for greater agility in developing new digital products.

In conjunction with the shift to a product or platform operating model, companies can see benefits from making complementary changes to their vendor agreements and technology choices. Many, for example, consolidate their vendor portfolio to include a few key strategic vendors and move their commercial vendor arrangements from activity-based to outcome-based pricing and performance management. They might shift their application support and maintenance deals from pricing based on volume (for example, tickets serviced) to pricing based on outcomes (for instance, uptime), thereby bolstering application performance over time. We've observed that pharmaceutical companies can cut costs by an average of 10 percent with vendor consolidation,

while outcome-based contracts can orient the strategic interests of vendors and customers around more strategic aims, enabling greater alignment, flexibility, and innovation.

Likewise, modernizing the technology infrastructure can also pave the way for large-scale digital and analytics transformation. Pharmaceutical companies can rationalize their applications and accelerate their cloud migrations, both to reduce the technology debt that can thwart agility and to create a modern technology foundation. Cloud infrastructure provides the flexibility and scalability to invest in strategic capabilities, such as on-demand, AI-assisted decision-making, and automated end-to-end workflows.

In our experience, these shifts can enable pharmaceutical clients to free up as much as 30 percent of IT spending and refocus those resources on accelerating digital and AI priorities.

Action 2: Dive into DataOps to drive innovation

Data access and quality have been major inhibitors of digital and analytics transformation in the pharma industry. It's difficult to identify what data exists, access it quickly, monitor its use, and ferret out duplicate or siloed data sources. In many companies, manual data processes persist, making any advanced analytics at scale or speed impossible. Before pharmaceutical companies can achieve digital and analytics transformation, they must embrace data transformation.

Enter DataOps, a set of collaborative practices, capabilities, and tools that can standardize and automate data use to improve quality and reduce the cycle time of advanced analytics. A DataOps approach can enable pharmaceutical companies to extract more value from their data and more quickly advance and scale their digital and analytics initiatives. In a company that embraces DataOps, business users can more readily find, access, integrate, and republish data across the enterprise, a critical foundational capability for analytics applications.

Here's how it works: Cross-functional teams build a data stack that can integrate data from multiple sources. They then define standards for data governance and ownership, access management, development priorities, and data products. A DataOps approach requires new skill sets, such as data stewardship, to manage data products and ensure their quality. But once pharma companies have those capabilities, they can develop a set of automated tools, such as anomaly or data drift detection, to streamline data-engineering efforts. A DataOps engine can be the driver of ongoing digital and analytics innovation.

GlaxoSmithKline has embarked on a DataOps transformation with Onyx, a group of platforms GSK intends to use to "build a comprehensive data and machine learning ecosystem," according to the company's website, that will support its scientists in creating next-generation medicines.

Action 3: Industrialize AI with MLOps

With DataOps in place, the pharmaceutical industry has a multitude of applications for AI and machine learning, from automated indication finding to risk estimators to predicting the improvement in patient outcomes from digital health care solutions. However, like many companies in other sectors, pharmaceutical companies have typically treated their AI pilots and projects as one-off initiatives, with business units requesting advanced analyses and model building from their digital and analytics teams as needed. It's an inefficient and, more importantly, unrepeatable approach. And while it may deliver some success in specific business cases, it will never yield transformation at scale or speed. What's more, this approach can open the organization to unnecessary risk.

To advance from singular, siloed efforts to building a standardized engine for continual AI development, pharma companies can implement machine learning operations (MLOps). Rather than developing models from scratch with no consistent mechanisms for deployment or monitoring, MLOps standards and processes enable repeatable,

factorylike development, deployment, and monitoring of AI capabilities.

In an MLOps environment, machine learning models and applications can be built by drawing on a catalog of reusable components, or chunks of code, that perform specific tasks and can be rapidly combined. Individual products can still be managed by product owners who understand and can advocate for the user. But on the back end, an AI production line is hard at work delivering reliable, risk-compliant, and ready-to-use models at scale, deploying them through a constant process of integration that automatically tests code for conformity with development standards.

By adopting MLOps, pharmaceutical companies can scale AI and machine learning across the organization, integrating it into core business processes and workflows. Digital teams, supported by MLOps and DataOps, can advance from simple regressions to foundational models and generative AI that can radically change how work is done throughout the pharma value chain, including R&D, medical, and commercial functions.

McKinsey research indicates that companies adopting this approach are much more likely to realize scale and value from their AI investments, with some adding as much as 20 percent to their earnings before interest and taxes (EBIT).

At Pfizer, for example, AI and automation are helping to reduce cycle times and widen access during clinical studies. The company is also using machine learning to monitor safety profiles and ensure regulatory compliance. And on the commercial side, Pfizer has deployed a digital-rep adviser, powered by AI and machine learning, to provide sales teams with targeted decision support when they interact with physicians.

Action 4: Rapidly transform talent strategies

Scaling digital and analytics delivery and outcomes requires more than new operating models, data practices, and AI/machine learning approaches.

Having the right talent is critical. Pharmaceutical companies can offer competitive salaries, compelling missions, and innovation cultures—all key to attracting high-performing digital professionals. Yet, the struggle to attract and retain the tech talent they need, from data scientists to product managers to experience designers, remains very real.

With digital tech talent vital to their transformation initiatives, pharmaceutical companies would benefit from sharpening their hiring and retention efforts. A recent wave of tech-company layoffs offers the pharma industry an opportunity to scoop up critical skills and talent to drive their digital and analytics ambitions. Two approaches can help: the talent “win room” and hiring by acquisition.

A talent win room is a hub for prioritizing and meeting an organization’s most urgent talent needs. To set one up, the company can pool resources in a center of excellence. Taking a page from the product-operating model described above, a cross-functional product team—comprising tech-talent specialists and a product leader—focuses on the talent lifecycle, from planning and hiring to management and retention. A talent win room offers a fast, flexible approach, using an agile test-and-learn model, to developing new ideas. It may develop better talent planning approaches, new processes for hiring and onboarding, innovations in talent management, more meaningful development opportunities, and new career paths that prioritize diversity, equity, and inclusion.

One leading pharma company recently created a hub for digital talent, revamping hiring and onboarding to be more experiential and productivity-focused. The talent win room identified a broad set of new recruiting channels and more proactive sourcing, upskilled its recruiters for digital hiring, and designed an experience-backed onboarding journey. The result: the rapid recruitment of more than 50 full-time digital employees within six months.

Pharma companies that need to upgrade their capabilities quickly can also look to M&A deals

for digital, AI, and healthcare-technology talent. Given the rapid evolution of technology, acquiring tried- and-tested talent allows the company to meet the demands of innovation faster than upskilling. This “acqui-hire” strategy can be effective in closing common digital talent skill gaps such as product management, experience design, and data science. In 2023, the German immunotherapy developer BioNTech announced its intent to acquire InstaDeep, thereby strengthening its AI and machine learning capabilities to discover, design, and develop next-generation immunotherapies at scale.¹ The press release noted the acquisition was expected to instantly deepen BioNTech’s digital bench by 240 employees with AI/machine learning experience.

Action 5: Define a digital health strategy

US venture funding in digital health peaked at almost \$30 billion in 2021.² Many pharmaceutical firms are eager to participate in this digital health space. As firms’ portfolios shift toward scientific breakthroughs with substantial budget impact (for example, metabolic or cardiovascular R&D) and/or administration complexity (for example, cell and gene therapy), digital health solutions can provide an attractive adjacent value pool. In relation to their digital and analytics ambitions specifically, partnering with or investing in digital health companies creates opportunities for pharmaceutical companies to introduce new digital health applications more rapidly and to more directly engage with patients and in their therapeutic areas of focus. In the past three years, according to a McKinsey analysis, the top five pharma companies have announced more than 50 investments in digital health companies and assets and have formed twice as many digital health partnerships. As examples, Sanofi recently

established an agreement with DarioHealth to develop digital therapeutics, and AstraZeneca and Huma Therapeutics announced a partnership to build disease-management solutions.³

In the past, pharma’s participation in this space has occurred in fits and starts, yielding few new solutions at scale. To ensure the outcomes they seek today, pharmaceutical company leaders first need to coalesce around and clarify their digital health strategies. Not every company will choose to compete in digital health, but those who do could address the following key strategic issues:

The role of digital health in the broader portfolio:

Will digital health be a stand-alone revenue stream, or will it primarily support in-line brands? What other benefits (for instance, building more direct patient relationships, access to first-party data) will digital health provide? Defining the value proposition of digital health helps to create focus and clarity.

Primary areas to target: Pharmaceutical leaders should determine their digital categories of interest (for example, remote patient monitoring, digital therapeutics). Understanding market dynamics (for instance, growth, technology innovation trends) and in which areas the organization possesses advantages or disadvantages can narrow the field.

Go-to-market strategy: For each opportunity, pharmaceutical companies could define a clear commercialization model (for example, partnership, acquisition, co-development) during the initial diligence phases. This work helps leaders assess the viability of the economic model and strategic fit.

Road map and performance metrics: Creating a road map and defining clear stage-gates for assessing value reduces the risk of initiatives, enables broader organizational buy-in, and

¹ “BioNTech to acquire InstaDeep to strengthen pioneering position in the field of AI-powered drug discovery, design and development,” BioNTech press release, January 10, 2023.

² Madelyn Knowles and Adriana Krasniansky, “2022 year-end digital health funding: Lessons at the end of a funding cycle,” Rock Health, January 9, 2023.

³ “DarioHealth enters into strategic agreement with Sanofi U.S.,” DarioHealth Corp. press release, March 1, 2022.; “Huma and AstraZeneca partner to accelerate innovation for digital-first patient care,” Huma press release, March 23, 2022.

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fuels ongoing momentum. By validating the viability and scalability of digital health initiatives and monitoring user feedback and adoption, pharmaceutical companies can also halt initiatives that don't add value.

Getting started

Most pharma companies are eager to realize the kinds of business outcomes that embedding digital and analytics capabilities throughout their organizations can deliver. But that will require them to make the transition from dozens of small projects with limited impact to larger digital transformation plans in line with their business strategies.

Some companies mistakenly assume that their smaller bets have lower risk. But spreading resources too thinly across an uncoordinated set of activities and initiatives yields much activity but little value—and puts the firm at greater risk

of being left behind. A more beneficial approach is to identify a few important domains large enough to make a real difference in the areas that matter to the business and, then, to develop the key capabilities outlined above to standardize digital and analytics efforts so that they can be replicated across the business at scale. McKinsey research found that pharmaceutical firms making transformational changes are investing at least 20 percent of the company's EBITDA on digital and analytics programs.

Pharmaceutical firms seeking to jump-start their initiatives can begin by aligning key stakeholders around their digital and analytics transformation goals and developing a road map to guide their efforts. Then they can invest in the kinds of fundamental changes outlined above—new operating models, DataOps, MLOps, new talent strategies, digital health partnerships and investments—to extract the full value of their data and realize the outcomes they seek.

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