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The road to digital success in pharma

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Pharmaceutical companies can play a central role in the digital revolution of healthcare. But capturing this opportunity requires identifying the right initiatives.

Pharmaceutical companies are running hard to keep pace with changes brought about by digital technology. Mobile communications, the cloud, advanced analytics, and the Internet of Things are among the innovations that are starting to transform the healthcare industry in the ways they have already transformed the media, retail, and banking industries. Pharma executives are well aware of the disruptive potential and are experimenting with a wide range of digital initiatives. Yet many find it hard to determine what initiatives to scale up and how, as they are still unclear what digital success will look like five years from now. This article aims to remedy that. We believe disruptive trends indicate where digital technology will drive the most value in the pharmaceutical industry, and they should guide companies as they build a strategy for digital success.

Trends reshaping healthcare

Outcomes-based care is moving to center stage

Payors and governments have an ever sharper focus on managing costs while delivering improved patient outcomes, putting an even greater onus on pharma companies to demonstrate the value of their drugs in the real world—not just in randomized controlled trials—if they are to retain market access and premium pricing. In this environment, digitally enabled "beyond the pill" solutions, which include not just drugs but also sensors to collect and analyze data to monitor a patient's condition between visits to healthcare providers, are becoming critical to serving both parties' needs. These solutions help drive the adherence to treatment and outcomes that payors and governments seek, and they generate the data that pharma companies need to demonstrate their drugs' superior efficacy.

Patients are becoming more engaged

In a digital age, patients are much less dependent on their doctors for advice, increasingly able and willing to take greater control of their own health. They feel empowered by the vast amount of health information available online and on apps, and by the array of health and fitness wearables such as FitBit and Apple Watch. In one survey, more than 85 percent of patients said they were confident in their ability to take responsibility for their health and knew how to access online resources to help them do so.[1] In addition, patients are becoming keener to evaluate

[1] "Two-thirds of people believe they could be making more decisions about personal health and wellness on their own," a survey conducted by Ipsos in collaboration with the National Council on Patient Information and Education and Pfizer, 2015, multivu.com.

different healthcare products and services given that they bear a growing proportion of the costs. In a digital world, the ability to engage with patients as they make such evaluations could be key to the success of a pharma company's commercial model.

New competitors are moving in

Information and insights into patients' histories and clinical pathways are no longer the preserve of the traditional healthcare establishment. Where once health providers' paper-based medical records were the main source of patient health data, and drug research and development data were kept within the walls of the pharma companies, today, technology companies such as Apple, IBM, and Qualcomm Technologies are moving into healthcare. They are able to engage with patients through apps, health and fitness devices, and online communities, for example. And they are able to collect petabytes of data from these and other sources, such as electronic medical records and insurance claims, capturing valuable insights. For example, the IBM Watson Health platform—recently at the center of a partnership with Apple and its HealthKit health-sensor data platform—is using advanced analytics and natural-language-processing capabilities to deliver clinical decision support. Pharma companies will need to decide soon how to position themselves to compete or collaborate with these new players, or build complementary capabilities.

More information is available about product performance

Historically, pharma companies have controlled both the generation and dissemination of information about their products. Digital technologies have weakened that control, opening an array of new, independent information channels. There are online communities for sharing and discussing patients' experiences, apps and sensors to monitor the impact of therapy on a patient's daily life, and advanced data aggregation and analysis to link disparate, complex data sets and generate new insights into drug safety and efficacy. In response, pharma companies will have to build the capabilities to anticipate or react rapidly to these new sources of evidence, and remain the main source of authority on the performance of their products.

Process efficiency and agility is improving dramatically

Advanced analytics, sensors, and the automation of complex decisions are capable of delivering a step change in the efficiency, speed, quality, and responsiveness of business processes in all industries. The pharmaceutical industry is no exception. To thrive in a digital world, pharma companies will need to deploy next-generation technologies to streamline their business processes. They need to achieve near real-time transparency of their clinical-trials portfolio in R&D, for example, and frictionless sales and operations planning in the supply chain, as well as meet new expectations in efficiency and agility from customers, employees, patients, and suppliers.

Four areas of digital opportunity

Against this backdrop, we believe there are four main areas where digital developments will drive value for pharma companies, building on what we see as the key components of digital success—an ability to deliver more personalized patient care, engage more fully with

physicians and patients, use data to drive superior insight and decision making, and transform business processes to provide real-time responsiveness.

Companies do not have to become leaders in all four areas across the enterprise—some will deliver more value than others in relation to any given disease, depending on market dynamics and their portfolio. But to decide where to concentrate their efforts, they do need to develop a point of view on each area's potential to transform their commercial and innovation models. To help in these decisions, we sketch here a picture of how we believe successful pharma companies will operate in each area in the near future.

Personalized care: Sensors and digital services for tailored, 24/7 treatment

The ability to personalize interactions with stakeholders is a key value driver from digital technology in any industry. In pharma, this value will be realized in large part through the use of sensors and digital services to provide tailored care around the clock.

Within five to seven years, a significant proportion of the pharmaceutical portfolio will create value through more than just drugs. Many drugs will be part of a digital ecosystem that constantly monitors a patient's condition and provides feedback to the patient and other stakeholders. This ecosystem will help improve health outcomes by tailoring therapy to a patient's clinical and lifestyle needs and enable remote monitoring by health professionals of a patient's condition and adherence to treatment. There is already a plethora of wireless sensors on the market to measure a patient's biophysical signals. Combining these with other data about patients as they go about their daily lives—nutritional information collected by a smart refrigerator, for instance, or exercise information from smart gym weights—will allow real-time alerts to be issued to caregivers and physicians when there is a need for intervention.

For example, a care plan for a Parkinson's patient might include a medication regimen with "chip on a pill" technology to monitor drug taking along with a smartwatch that monitors the patient's condition, sends him or her reminders to adhere to the prescribed treatment, and sends the neurologist compliance and health-status reports. The neurologist can then coach patients on lifestyle changes or even customize therapy remotely. Such digitally enabled approaches to patient care are likely to improve outcomes to the extent that they could become a condition of reimbursement, particularly for expensive specialty drugs.

Several companies already offer integrated products and services. WellDoc, for example, has launched BlueStar, the first FDA-approved mobile app for managing type 2 diabetes, while AliveCor has built a smartphone-based electrocardiogram. Patients take their own readings, which can be reviewed by a remote expert without the cost and delay associated with seeing a specialist. Many more of these kinds of products have recently been approved or are in development.

Medication itself will of course still be important. But it will be more personalized, targeting the needs of each patient with greater precision than before. Advanced data analytics that mine electronic medical records, including diagnostic results, medication history, and genomic,

proteomic, and gene-expression data will help identify optimal therapies and predict how individual patients will respond to treatment.

Fuller engagement: Omnichannel conversations with physicians and patients

Digital-engagement technologies open up a whole new world for marketing, the exchange of information, and recruitment for trials. Pharmaceutical sales reps, medical-science liaisons, and patient-service teams can inform and influence patients, physicians, and caregivers in person or via mobile phones, the Internet, apps, or social media. Patients are already starting to use patient portals for their medical records and to communicate with their physicians, and they use apps to fill scripts and online patient communities to speak to other patients with the same disease.

Anytime-anywhere virtual care will become increasingly commonplace. Specialist virtual-care apps already exist. NeoCare Solutions, developed by Aetna, gives new parents returning home with infants from the intensive care unit on-demand coaching from a neonatal nurse. The US Department of Defense is testing robots to engage and screen soldiers for posttraumatic stress disorder,[2] while in the United Kingdom, political parties are making promises to enable patients to use Skype to call their general practitioners by 2020.

All of these interactions offer pharma companies the opportunity to derive value. To realize it, they will have to build advanced digital marketing and engagement capabilities similar to those deployed by leading retailers, airlines, telecom companies, and consumer-goods companies.

Data-driven insight: Advanced analytics to increase pipeline and commercial value

Pharma companies sit on a wealth of data, usually locked away in different technical and organizational silos. Some are already linking and mining their data sets to improve their pipelines, products, and strategies. But there remains a huge opportunity to create further value from data and analytics using internal and external data sources to drive superior results. A few examples follow:

- *In R&D*, digital discovery and the testing of molecules with advanced modeling and simulation techniques will be commonplace. For instance, physiological simulation will accelerate product development, and 3-D tissue modeling will help assess potential toxicity using computer simulation. In late development, sensor-data streams from in vivo clinical trials captured by wearables will be factored into registration filings and value dossiers to give an early indication of real-world effectiveness.

- *Marketing and sales forces* will deploy advanced analytics to understand prescribing behavior and potential patient profiles, enabling more precise targeting of providers and increasing the number of prescriptions filed. For example, a "patient finder" technology that mines electronic medical records to identify sufferers from specific rare diseases will enable sales forces and medical science liaisons to focus on providers caring for patients likely to have those diseases, although they are as yet undiagnosed.

[2] Multiple articles have been published on the use of technology in post-traumatic stress disorder (PTSD), including Patrick Tucker, "The military is building brain chips to treat PTSD," *Defense One*, May 28, 2014, defenseone.com.

- *Pharma companies* and other healthcare players link and analyze data from insurance claims, clinics, laboratories, sensors, apps, social media, and more in order to generate real-world evidence about a drug's efficacy, guiding reimbursement and clinical practices. We envisage a world in which most care is "protocolized"—that is, in which clinical decisions on the best treatment options are suggested to physicians by an automated decision algorithm informed by advanced analytics. In this environment, winning pharmaceutical companies will be those able to influence the algorithm. Payors, meanwhile, will be able to develop new approaches to contracting and risk sharing for specialty drugs. Payment based on adherence or cure-rate data, or even "micropricing" based on the daily measurement of specific outcomes and quality of life, are some of the possibilities.

Real-time responsiveness: Automated processes to improve cost, reactions, and agility

Cloud and mobile technology, sensors, and next-generation business intelligence will bring about a new wave of automation in business processes—that is, streamlined, automated work flows with few handovers and end-to-end, real-time transparency on progress, costs, and business value. This will drive a step change in the efficiency, responsiveness, and agility of a wide range of complex, often cross-functional, processes, be they in the back office, the supply chain, R&D, or commercial. Banks have shown that the processing time and costs associated with opening an account or mortgage origination can be reduced by up to 99 percent and 70 percent respectively, with a clean-slate redesign of these cross-functional processes and state-of-the-art digital technology enablement.

In pharmaceuticals, employee on-boarding, sales and operations planning, launch monitoring, and marketing-content approval would especially benefit from streamlined, automated work flows and increased transparency. Clinical-trial management, from recruitment to submission, is another area that will see dramatic change with advanced automation. Targeted online recruitment and remote-monitoring technology (sensors, connected devices, and apps) will increasingly enable clinical trials to take place in "real world" settings so that patients can go about their lives with very minor changes in habits, while participating in a trial. Greatly reducing interventions in clinics or trial sites during the trial of a drug will reduce the burden on patients and make trial conditions more akin to a patient's life when he or she is prescribed the drug outside a trial setting. Increased connectivity and automation in trial-management processes will also enable advanced trial design and monitoring approaches. For example, sites and sponsors can be connected in order to support the data management and analytics required for adaptive trial designs.

Capturing the value

Most pharma companies have started to build some digital capabilities, but talent and resources for their efforts can be fragmented, often across hundreds of small initiatives. Without clear strategic direction and strong senior sponsorship, digital initiatives often struggle to secure the funding and human resources required to reach a viable scale, and they cannot overcome barriers related to inflexible legacy IT systems. Talent and partnerships are also

critical issues—many companies realize they need to form partnerships to acquire digital capabilities and specialist skills but are often unclear about what kinds of partnerships to set up and how to extract value from them.

We believe there are three strategic actions pharma companies should take to overcome these obstacles and start on a path that will capture value from digital.

- *Focus on two or three flagship initiatives.* It is important to place a few big bets that will each be sponsored by a senior executive, made highly visible to the organization throughout design and pilot phases, and lauded when early wins start coming in. These flagships will need to be properly resourced from the start and supported by partnership initiatives that complement a company's existing capabilities. The objective is to secure early success, which in turn generates the buy-in and momentum required to drive the next wave of initiatives. The choice of flagship initiatives needs to be based on a company's pipeline, product portfolio, and business strategy. Companies should therefore identify the distinctive sources of value that digital technologies and capabilities can create in the disease areas in which they operate, and then define the flagship initiatives to develop solutions for two or three specific use cases. For example, a flagship initiative could be building a digital ecosystem (a solution combining sensors, apps, and services) for patient adherence to an upcoming oncology blockbuster launch drug (the use case).

- *Run collaborative experiments, and then scale what works.* Companies cannot be expected to know in detail up front what a winning solution looks like for any particular set of assets in any particular market. For example, it is not possible for a company to design from A to Z a digital medical-affairs ecosystem on paper without experimenting with different channel platforms and content types to understand how key opinion leaders prefer to interact with the company. Hence, companies need to set up the right environment for collaborative experimentation within the initiative: for example, by putting the right people from IT, business compliance, and outside partners in a "war room" to run quick test-and-learn cycles. When results are positive—patient awareness of a disease and a particular drug increases, for instance—efforts can be scaled up. Technology prototypes can become enterprise solutions, and new ways of working become formalized and integrated into business processes.

- *Develop the organization for new business models.* Digital talent may be scarce to begin with, but a digital center of excellence can help bring together what capabilities there are, concentrating them into a critical mass and avoiding duplication of resources across commercial and R&D. It can also run the portfolio of digital partnerships, ring-fence funding for digital initiatives, and codify and export learnings from pilots across markets. In this new world, it will be vital that IT evolves to be able to manage faster experimentation cycles, while still managing the legacy estate for cost and reliability. This should lead to a two-speed

IT function,[3] where “fast domains” operate with different skills, architecture principles, budgeting, and planning cycles to those that exist in “legacy domains” that remain focused on enterprise resource planning and traditional business applications.

We have outlined the four areas in which we believe digital will drive the most value for pharma companies. The areas leverage digital innovation to make products and services more personalized, physicians and patients more engaged, decisions and product evidence more data driven, and business processes more immediate. To capture this value, each company will need to consider how its businesses are set to be affected by the digital changes under way, and then chart its own course accordingly. A better understanding of what digital success looks like will help companies get to their destination: improved innovation and commercial models for pharma companies and better care for patients. ◻

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[3] Oliver Bossert, Chris Ip, and Jürgen Laartz, “A two-speed IT architecture for the digital enterprise,” December 2014, mckinsey.com.