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How pharma can win in a digital world

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The digital revolution is well under way for pharma companies. We spoke with 20 leading executives to find out how they cope—and what they do to stay ahead.

The digital revolution continues to transform healthcare fundamentally, and many people believe that a tipping point is finally within reach. In 2014, digital health investments topped \$6.5 billion, compared with \$2.9 billion a year earlier.¹

The critical question now for pharmaceutical companies is how to stay ahead of these changes. To answer it, we sought to learn the trends and implications of digital health by interviewing 20 thought leaders across a variety of segments, including analytics, biotech, data, pharma, providers, technology, and venture capital. The consensus is that as healthcare continues to digitize, pharma companies must transform themselves in basic ways to stay competitive. Successful ones will rethink their business and operating models, transform their cultures and capabilities, and adopt a new, longer-term mind-set that fosters innovation and bold strategic moves.² These conclusions stem from three important themes that we took away from our conversations:

1. Dramatic changes in the traditional roles and dynamics of healthcare stakeholders have fundamental implications for pharma companies.
2. It is time to reimagine them as solutions companies, not asset companies.
3. The technology is ready, but pharma companies must change if they are going to enable and harness it more successfully.

These themes strongly suggest that success in the new digital environment will require three big shifts: forging ahead beyond the pack mentality and embracing experimentation and risk taking, developing a collaborative culture and challenging barriers to sharing, and reinventing companies by building capabilities beyond traditional healthcare and updating the operating model.

Emerging themes

Dramatic changes in the traditional roles and dynamics of healthcare stakeholders have basic implications for pharma companies. The digital revolution has spawned a consumer revolution

¹ *StartUp Health Insights annual report 2014: The year digital health broke out*, StartUp Health, December 2014, startuphealth.com.

² To read more about our experience, analysis, and views on these trends and their implications for strategy, see David Champagne, Amy Hung, and Olivier Leclerc, “The road to digital success in pharma,” August 2015, mckinsey.com.

symbolized by an increasing demand for connectedness and information. Consumers with new technology tools are becoming more active and self-directive, which changes their interactions with providers, payors, and pharma companies. As a result, new and unfamiliar forms of behavior will fundamentally affect the pharmaceutical business:

- *Individuals are starting to control their own health treatments.* Patients are becoming more than just passive recipients of therapies. “Healthcare will be driven much more by consumers than physicians, with patients increasingly coming to their doctors with more information, parameters they measured at home, and an informed opinion about how they should be treated,” says Dr. Bertalan Mesko, medical futurist and author of *My Health: Upgraded* (Webicina, September 2015) and *The Guide to the Future of Medicine* (Webicina, 2014). Dan Goldsmith, the chief strategy officer of Veeva Systems, a cloud-based life-science business-solutions company, takes the idea further. “In the next three to five years,” Goldsmith says, “instead of patients just being informed and more inquisitive, they will be actively designing the therapeutic and treatment approaches for themselves with their physicians.”

As patients assume greater control over their own health, including the therapeutics they take, pharma companies must recognize this new decision-making power and develop better ways to engage them. That’s not easy. Li Ma, vice president of strategy and investment at Alibaba Health Information Technology, says that “many pharmacos are trying to engage patients. But it is difficult because they often don’t know exactly who their patients are and also have a hard time determining exactly what engagement model resonates with their patients.”

Some pharma companies already recognize the growing importance of connecting with patients and are doing something about it. As the customer-experience director at one top pharma company says, “We use different approaches, depending on the target audience, to reach patients across a number of channels that relate specifically to their preferences. We observe patient behavior via online communities, participate in dialogues on research communities, have in-home visits, observe patient–physician interactions, and use quantitative methods to analyze trends and adjust content as needed to drive better engagement.”

If pharma companies want to go beyond engagement and truly encourage changes in health behavior, they will need to create different kinds of solutions. Although many solutions, particularly apps, have been developed in the past few years, not all can be adopted. As Dr. Todd Johnson, the CEO of Noble.MD, puts it: “Apps that face the patient but are designed to solve pharma-company business needs should never exist. Conversely, the market desperately needs apps that focus on patient and/or provider needs—real needs with a measurable impact on health quality and cost. If those apps also meet business needs—as a secondary or tertiary outcome—they have a chance of being adopted.”

- *The clinical environment will change fundamentally.* As consumers become more engaged and care environments more complex, physicians will need new skills and tools. “How doctors spend their time will change dramatically,” says Vinod Khosla, founding CEO of Sun Microsystems and founder of Khosla Ventures. “They will shift to spending a smaller proportion of it ordering diagnostics and interpreting results, and much more on the social elements of healthcare—helping patients and families think through treatment options.”

Physicians will also have to integrate increasingly massive quantities of traditional and nontraditional health data—for example, hundreds of fragmented electronic health records, as well as data from thousands of wearable devices and other “quantified self” technologies. This advance is crucial because “wearable devices that today are still in the more recreational-grade state are changing incredibly rapidly into research-grade and, ultimately, clinical-grade” tools, notes Dr. Eric Schadt, founding director of Icahn Institute at Mount Sinai.

In the near future, physicians may receive a constant, daily stream of data from some patients. The Diovan hypertension pill, with the embedded Proteus chip, is already in trials, with stellar patient-compliance results.³ The chip records the time when the patient takes a pill and transmits this information from inside the body to a patch the patient wears. (The patch also captures other physiological data.) This information can be shared with a smartphone, a laptop, and the cloud, so the patient and provider can access it. Such developments have prompted Dr. Krishna Yeshwant, general partner at Google Ventures, to conclude that “physicians need to operate in a more complex environment with an ever-growing range of tools. Physicians need a package of solutions to navigate this environment.”

- *Patients’ brand loyalty dwindles as cost consciousness rises.* People are now much less loyal to brands and companies—both their insurance companies and the pharma companies that make their medicines. “The average tenure for a member to be on an individual insurance plan is now something like two to three years,” says Sanjay Mathur, CEO of Silicon Valley Data Science. The reasons vary, from more frequent job switching to employers that adopt new plans to cut costs, he notes. “In the future, no one will care what brand of drug they will take. And with device, behavior, and health-proxy data available, their method of selecting drugs will change dramatically.” The increased cost consciousness of patients exacerbates this tendency: they compare what they would pay for different plans and the efficacy and price points of different treatments.
- *Pharma companies will lose exclusive control over their value stories.* As the lines among payors, providers, and pharma companies blur, carefully controlled trial data will no longer be the sole source of outcome data. The dynamics between players are evolving: payors are expanding into areas that providers and pharma companies traditionally owned (for

³ Brian Dolan, “Novartis invests \$24M in Proteus Biomedical,” *MobiHealthNews*, January 12, 2010, mobihealthnews.com.

example, payors are in some cases excluding drugs completely from their formularies). “With health data becoming more readily available in a more digestible form, payors and providers alike will have more information to link drugs to outcomes and inform value-based pricing,” says Amy Abernethy, MD and PhD, the chief medical officer and senior vice president of oncology at Flatiron Health. “The healthcare industry will start to merge, and the lines across stakeholders will blur very quickly,” adds Dr. Wolfgang Lippert of Salesforce.com’s Healthcare and Life Sciences Industry Business Unit. “Payors will become increasingly like providers in offering interventions and home care, and increasingly like pharma in analyzing data and pressure-testing value,” he predicts.

For pharma companies, it will not be enough to accept that they won’t continue to fully control their product data. To access real-world data from many sources, they will also need to provide others with more access to their own trial data and to collaborate as appropriate. As Neeraj Mohan of Blackstone Group says, “Pharma companies may think they need to keep their data secure, but not being transparent about clinical trials will in fact put them at a perilous disadvantage in front of patient groups and, eventually, regulators.”

Reimagine pharma players as solutions companies, not asset companies

As healthcare start-ups and technology giants move into what was traditionally the pharmaceutical domain, pharma companies will need to revamp their value propositions significantly. Dr. Krishna Yeshwant of Google Ventures pinpoints the challenge in this potential future: “For pharma, there comes the question of whether they can tie digital to the assets they have. There is an interesting broader conversation to have with pharmacos about moving from a products-and-pills company to a solutions company.” The associate director of US medical affairs at one global pharma company agrees, adding, “One of the most exciting values of digital to the pharmaceutical industry is how technology may be able to supplement or support pharmacological therapies to more effectively address the problem of suboptimal outcomes.”

The Diovan–Proteus chip combination for hypertension, mentioned earlier, is one example. Another comes from Google and its partnerships with DexCom, Novartis, and Sanofi to combat diabetes. Among the approaches is uploading glucose and insulin levels to the cloud in real time through contact lenses (worn by the patient) that measure glucose levels in tears; a bandage-sized sensor sends the data to the cloud. This technology can greatly improve the quality of diabetic care and help prevent complications through the real-time detection of any aberrations in glucose and insulin levels, which would trigger the right type of medical attention.

Beyond partnering with technology players, if pharma companies provided solutions that combined different therapeutics from different manufacturers, they could also add an enormous amount of value. In oncology, there is a growing movement to combine novel immune and targeted therapies with market-leader PD-1s from Merck and BMS.

To develop the most promising combinations efficiently, these pharma companies need to access and share early data and improve their digital infrastructure to manage complex trials and submissions jointly. If intercompany combos are to move beyond HIV and oncology,

pharma companies must realize that they themselves, and not only patients, can benefit from partnering and combo solutions. For example, they can mitigate the risk and cost of clinical trials for combo therapies and leverage the strengths of each partner for what it does best.

Chris Geissler and Sanjay Mathur of Silicon Valley Data Science stated the case for reimagining pharma companies in even stronger terms: they say it could actually make the difference between success and failure. Big Pharma, they add, may be doomed to fail unless it transforms itself, and what such a transformation looks like is an open question that depends on several factors. For instance, Mathur argues that pharma companies will have to build “trust and form personal relationships with the consumer.” Such a transformation may be difficult for big pharma companies “mired in traditional approaches and legacy organizational structures.” These companies would not be able to compete effectively with nimble, small to midsize rivals that “have nothing to lose. Change and survive or be acquired,” says Mathur.

Finally, certain disease states are ripe for the introduction of comprehensive solutions or systems. Diabetes, which affects 387 million people around the world and consumes one in nine (\$612 billion) US healthcare dollars today,⁴ is an area ready for an end-to-end solution.

As pharma companies shape their purpose and future direction, the insights from our interviewees suggest that fundamental change is needed. Companies must redefine the space they play in. They must get more specific information about their customers to identify the solutions and experiences—not just the products and drugs—those customers really need. They also have to understand precisely how such solutions will capture the most value. Then they will need to reconfigure their organizations to capture this value and realize their new approach to the business.

Technology is ready, but pharma companies must change to enable and harness it

Our interviewees agreed that technology itself is not what hinders the pharma companies’ full-scale adoption of digital health technology. “Lots of people say there are technical challenges to integrating different medical-record systems, but I don’t think that’s true,” says Dr. Krishna Yeshwant of Google Ventures. “I struggle to see what the tactical limitations are from an IT perspective.”

That said, new technology often faces strong organizational barriers, such as mind-sets that resist IT change and conservative cultures that base decisions on perceived risks. These cultures often lack compelling incentives that reward employees for behaving in new ways by moving beyond the core. Their business structures discourage risk sharing among stakeholders. The performance metrics of most pharma companies connect directly with the bottom line and the current P&L, not with innovation, customer engagement, and future strategy.

As a result, these companies generally try new approaches or technologies only when they see their peers doing so. Most of the digital leaders we interviewed, like Kara Dennis, managing director of Medidata’s mHealth unit, believe that “every one of the required technologies exists or is almost there and largely good enough. The challenge is in pulling the new technologies

⁴ *IDF Diabetes Atlas*, sixth edition, International Diabetes Federation, 2013.

and processes together for an integrated clinical trial, and this will require life-science companies to remove organizational barriers to change.”

Take data transparency and data aggregation, for example. Multiple third-party players are aggregating health data and making the data and insights available to providers and payors. “If I were a life-science company, I would want to know what the story about my drug is going to be before it’s told by others,” says Dr. Amy Abernethy of Flatiron Health. “I would want to know what adverse events there are before others surface this for me. With constant monitoring, you will find a lot of signals, and you will need to learn how to handle these signals with respect to reporting to the Food and Drug Administration. But this is not a reason to stick your head in the sand; this is how drug development is going to be done in the 21st century,” Dr. Abernethy predicts. A director at a top 20 pharma company adds, “There’s a lot of alarm around utilizing social-media data for fear of discovering adverse events. Ignorance is not an excuse. A company like ours would like to be responsible for understanding what is being said.”

Many companies come at this issue backward, according to Sanjay Mathur of Silicon Valley Data Science. The story should be “about the technology second”—not first, he says. “Companies are so consumed with what technology to use they forget that the most important thing, to start with, is to ask the right questions. You don’t need real-time insight if you don’t have a place for real-time action.”

Pharmaceutical companies must also determine what they will need to uncover distinctive insights. These insights will drive their technology strategy, which will help them to integrate vast amounts of data from disparate sources and to use analytics or other tools that support the entire business.

Three fundamental shifts

To achieve all of these goals, pharma companies must fundamentally shift their mind-sets, cultures, and capabilities. Only then can they transform themselves into the agile, experimentally minded solutions providers they need to be. The themes emerging from our interviews suggest strongly that companies must make three strategic shifts to succeed:

- *Go beyond the pack mentality by embracing experimentation and risk.* Pharma companies must now meet the consumers’ higher expectations, which stem from their experiences with other industries. “We have seen significant evolution in the consumer-electronics space,” says Dr. Krishna Yeshwant of Google Ventures. “Now if we turn to the medical-software and device space, we can push more evolution—for example, user-friendly devices or user interfaces. Users of pharma products are comparing them with those of the best consumer-electronics brands. That’s the new standard.”

A lack of risk appetite appears to thwart this evolution. “There is a strong pack mentality. Organizations don’t change unless they see everyone else change at the same time,” says Dan Goldsmith of Veeva Systems. “This has resulted in slow advances and a lack of innovation across the industry for years. In essence, pharma wants to be in control and avoid

the risk of standing out.” Now, despite the fact that patients are taking back control over their own health, “How many pharmacos do you see out there engaging with patients?” he asks.

Some interviewees feel that there will be action if experimentation takes place in the right place and is both encouraged and rewarded. Today, different departments in pharma companies have different appetites for “radical novelty,” says Johan Grahnen, formerly the principal data scientist at Ayasdi, an advanced-analytics company specializing in machine intelligence. “It is difficult to encourage experimentation in departments that are driven by compliance. Strong leadership buy-in and support is required to set a unified vision,” he adds.

- *Embrace a collaborative culture and challenge barriers to sharing.* A collaborative approach is necessary if pharma companies are going to stay ahead of healthcare digitization. Significantly, some have already recognized the need to stimulate, connect, and support innovative ideas across business units and geographies. “It is critical to have grass-roots experimentation,” says Bruno Villette, chief digital officer at Takeda Pharmaceuticals. “We set up an internal digital accelerator and innovation fund to stimulate this, and we run a regular *Dragons’ Den* competition to identify and fund development and pilots for the best ideas. The competition helps us avoid waste and bring speed, focus, and energy into digital innovation. When a pilot proves its value, we stand ready to put in the resources to scale the idea up quickly to the rest of the enterprise.”

As we mentioned earlier, pharma companies should also recognize that they must contribute data if they want to see what data others have. However, as Sanjay Mathur and Chris Geissler admit, “no real mechanism or incentives currently exist to foster” this kind of sharing behavior.

Inder Singh, CEO of Kinsa, suggests another requirement. Pharma companies must “reimagine their legal and compliance organizations to work more closely with regulators as companies creatively think about how to enable new business-model innovation,” Singh says. “Health information is highly regulated, and the regulatory context has not always kept up with the pace of innovation. Pharmaceuticals will need to actively work with regulators to find a path forward.”

Kristy Junio, senior director of Healthcare & Life Sciences for Oracle Marketing Cloud Industry Solutions, argues that pharma companies need to build novel, trust-based personal relationships with consumers. These ties “replicate the experience and trust that providers were able to build with patients.” Technology, she says, is one way to create this bond—for example, by providing patients with more personalized information about their health and treatment.

Finally, pharma companies have a choice between developing digital solutions in-house or through partnerships. Some of our interview subjects, including Dr. Todd Johnson of Noble.MD, believe it would be better for these companies to partner with third-party technology providers through innovation funds or joint ventures. “With pharmacos’

solutions often offered and marketed in providers' offices, third-party partners offer more objective, unbiased representation," Johnson observes. He believes that objectivity and a lack of bias are critical for providers to build relationships of trust with their patients.

- *Reinvent companies by building nontraditional capabilities and embedding them in new operating models.* Attracting, engaging, and delighting consumers requires a deep understanding of how to deliver a customer experience—far beyond just selling a product, pill, or diagnostic test. The problem is that “most healthcare innovation gets smothered in preference for something that drives the bottom line immediately,” says Aimee Jungman, who has worked at companies including Frog Design, Genomic Health, and Pfizer. “There’s a lack of commitment to building something new, which could disrupt current cash flows, and something lasting, for the patient and physician to improve care,” she says. Neither of these aims will be realized unless pharma companies build new capabilities and revitalize their existing business and operating models to foster greater experimentation and bolder strategies.

Going from selling products to selling digital solutions demands completely new processes and ways of working. As Dan Goldsmith of Veeva Systems says, “In some ways, it is easier to talk about the technology, data, and analytics aspects of the digital revolution. But the harder question is, really, what are the fundamental organizational changes that will need to occur? With great advances in technology over the past five years, technology change is the easy part.”

Our conversations and client experience reveal a widespread perception that C-suite executives have not fully embraced digital. Their incentives typically reward them for taking a “wait and see” approach, which can stifle innovation and hinder change across the organization.

Nevertheless, virtually all of the thought leaders agreed that pharma’s old model must change and new blood must enter the system. The good news is that they see some pharma companies starting to value nontraditional skill sets—hiring marketers from other industries, such as retail, and building strategic relationships with creative agencies.

Dr. Amy Abernethy of Flatiron Health says that pharma companies need to double down on talent that truly understands science and health data. Some examples? “People like clinical informaticists who know how to work with electronic health-record data, clinicians who understand the science and didn’t just drop out of academia, or data scientists who aren’t just the IT guys in the basement but are business partners with the senior leaders.” Whether pharma companies choose M&A, strategic partnerships, or organic incubation and experimentation, they must find a way to adapt and evolve quickly. If they don’t, third-party players more willing to take risks, chart the course, and listen to consumers could supersede them.



The digitization of healthcare, even in the early stages, is having a real impact on how not only doctors but also patients manage those patients' health and how pharma companies need to do business. Digital innovation still faces challenges, such as the lack of clarity about who pays for digital solutions, but digital and data analytics should certainly be high on the C-suite agenda. Pharma companies that want to keep up—or move ahead—must be bold and adopt an act-now mentality. They must build innovative business models, invest in new capabilities, and transform their organizational cultures. □

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