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Four keys to successful digital transformations in healthcare

By taking a comprehensive approach to digitization, healthcare companies can deliver products and services more quickly, boost innovation in the industry, and hold down costs.

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Healthcare companies (device manufacturers, payors, and providers, among others) have long relied on technology as a core utility—for tracking R&D efforts and patient information, scheduling payments and services, launching new care options, and generally keeping the lights on.

The digitization of products and processes, however, has dramatically changed the game for everyone. Consumers' expectations about healthcare services are increasingly being informed by their experiences with large digital-born companies. With this “customer experience” frame in mind, healthcare companies are seeking to integrate the latest technologies into existing business models and IT architectures to improve services. At the same time, they are grappling with new, nontraditional

entrants to the marketplace (IBM, and Microsoft, for instance), as well as ever-present regulatory and risk-related concerns.

More and more healthcare companies worldwide are finding that digital technologies must be managed not as utilities but as strategic assets. Some are attempting to bridge the gap between legacy and digital IT by undertaking complex systems transformations. One large healthcare-technology company is experimenting with ways to maintain its existing IT architecture while using analytics to securely mine the data it collects for useful business insights. Similarly, a large drugmaker is exploring the use of cloud platforms to reduce data storage and processing costs and to boost the speed of its R&D efforts.

Still, most pharmaceutical and medical-technology companies are digital laggards compared with companies in travel, retail, telecommunications, and other sectors (Exhibit 1). Their digital-transformation efforts can stall for many of the same reasons such efforts are thwarted in other sectors—for instance, a limited understanding of the specific ways that implementation of new technologies across complex product and services lines can create business value, a shortage of native digital talent, and insufficient focus on digital topics from senior leadership.

Our experience with companies inside and outside the healthcare ecosystem suggests there are four core principles for succeeding with this kind of all-encompassing change program. Healthcare companies first need to identify and prioritize their critical sources of value; they need to identify the products and services they provide that lead to competitive differentiation and that would benefit most from digitization. Second, they must build their

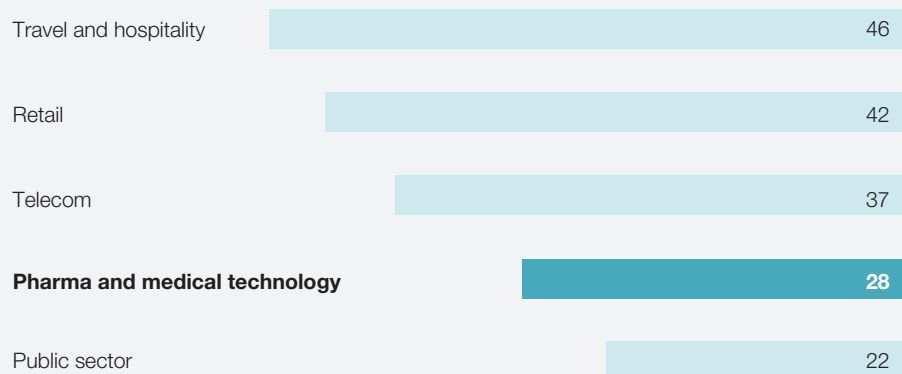
service-delivery capabilities—not just in physically integrating and managing new digital technologies but also in implementing new approaches to product development and distribution (for instance, agile and DevOps methodologies). Third, healthcare companies should look for ways to modernize their IT foundations, for example upgrading pools of talent and expertise in the IT organization, moving to digital platforms such as cloud servers and software-as-a-service products, managing data as a strategic asset, and improving security protocols for the company’s most vital assets. And fourth, companies must ensure that they build and maintain core management competencies. In other words, all the enablers that allow them to pursue a successful digital agenda.

In this article we consider the changing healthcare landscape, the emerging opportunities in digitization, and the four core principles healthcare companies can follow to succeed with their digital transformations. Consistent with digital leaders in other industries, the

Exhibit 1

Pharmaceutical and medical-device companies lag other industries in their digitization efforts.

Digital Quotient scores by industry,¹ global, points (out of 100)



¹McKinsey’s Digital Quotient assessment measures organizations’ digital maturity and capabilities against benchmark companies in various industries and geographies. The tool considers companies’ digital business strategies, culture, organization, and capabilities in determining scores.

Source: McKinsey analysis

front-runners in digital healthcare have a significant opportunity not just to win in their desired markets but also to change the rules of the game.

Understanding the changing landscape

Healthcare companies across the world face a different competitive environment than they did a decade or more ago—in part, because of the degree to which digital tools and technologies are disrupting typical product- and service-development processes, customer interactions, delivery mechanisms, back-office operations, and supplier relationships for large players in the sector.

Indeed, never before have so many technologies with the potential to affect the healthcare industry matured so quickly en masse. Next-generation genomics; big data and advanced analytics; machine learning and automation programs; connected, sensor-enabled devices and wearables; 3-D printing; and robotics—all have the potential to fundamentally change the way healthcare companies develop products and provide services. Consumers are more informed about and more engaged in healthcare decisions because of technology, and regulators and policy makers are advocating for the development of open data and technology standards as well as knowledge-sharing initiatives among companies in the industry.

As a result, some of today's healthcare companies are focused on using technology to improve their interactions with patients and ecosystem partners, rein in costs, streamline operations, and better manage changing industry regulations. They're acknowledging the shift toward evidence-based medicine and exploring ways to use big data to customize care programs and make the case for investment in and reimbursement for emerging devices or treatments. A good example of digital reinvention in healthcare is the life sciences giant Johnson & Johnson: the company has undertaken a massive digital transformation of its IT organization, moving a bulk of its processing workload to a hybrid

cloud environment and incorporating data lakes, data analytics, and agile development practices into its operations. As a result, the company has been able to bring together different businesses capabilities—design thinking, deep clinical knowledge, and a global understanding of healthcare systems—to create new patient-centered offerings. (See “Healthcare giant shares prescription for digital reinvention,” on McKinsey.com.)

By making the shift from healthcare company to digital enterprise, industry participants can capitalize on a number of emerging “battleground” opportunities. Among them are the following:

- **Building** direct relationships with consumers to influence treatment outcomes rather than working through institutional intermediaries. One service provider, for example, has linked disparate sources of data so clinicians can more easily analyze personal, clinical, demographic, genomic, and environmental information to determine which personalized interventions would be appropriate for patients suffering from chronic conditions such as asthma and multiple sclerosis.
- **Finding** new sources of value in different profit pools. For instance, some healthcare companies, particularly new market entrants from the technology sector, are looking for ways to take caregiving out of its traditional hospital setting. Instead, they are developing ways to offer digital diagnostic services, remote health monitoring, and home healthcare.
- **Collaborating** to acquire complementary capabilities. Increasingly, providers and device manufacturers are partnering with other companies in the healthcare ecosystem, including market entrants from the high-tech sector. The latter are masters of consumer marketing, but, in general, they are relatively unfamiliar with regulatory processes in healthcare. Healthcare companies can help fill that expertise gap.

- **Contributing** to burgeoning industry standards and conduct. Healthcare companies at all levels of the service chain have an opportunity to define new rules of engagement. For instance, they could collaborate with the government on standards for open access to patient information or care protocols, thereby democratizing the delivery of healthcare.

Succeeding with a digital transformation

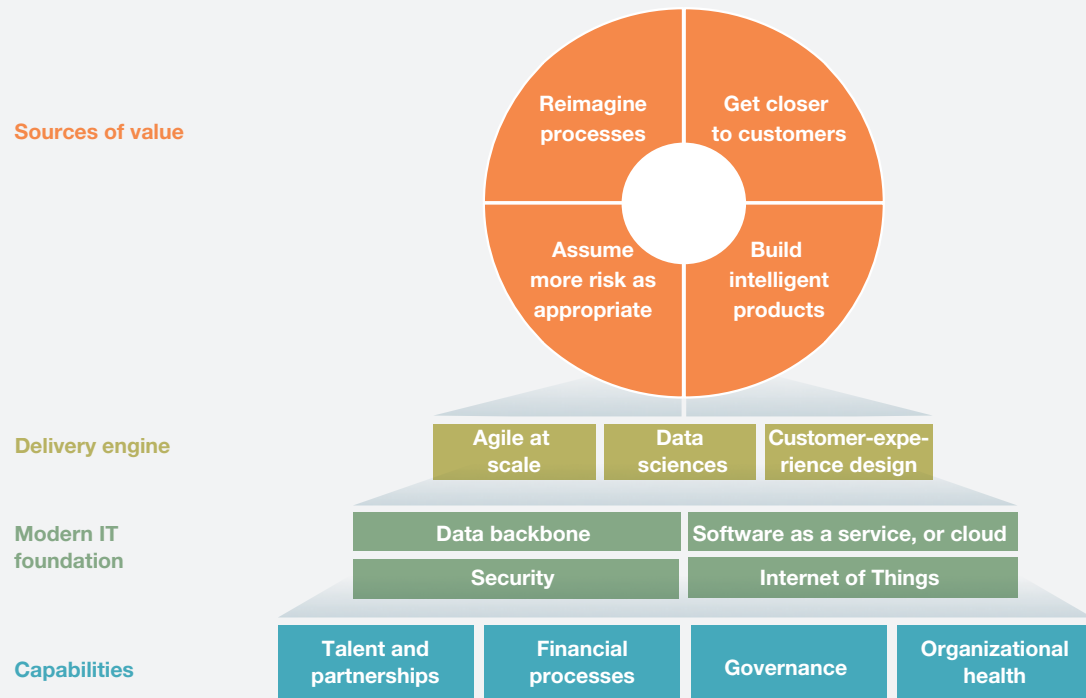
The healthcare environment is becoming more distributed and complex. To adapt, companies will need to embrace open systems that allow for sophisticated analysis of multiple streams of data and the development of customer-centric services. They must be able to view processes as end-to-end

flows rather than discrete hand-offs, embrace more risk (as appropriate), move at higher speeds, and engage in innovative partnerships. All of this is easier said than done for companies saddled with decades-old legacy systems, processes, and operating models that were optimized for a brick-and-mortar world.

In our experience, the odds of successfully transitioning to digital systems and ways of working increase when healthcare companies focus on four important dimensions of their businesses: critical sources of value for the company, the means by which the company delivers products and services, the company's IT architecture, and its talent, finance, and governance processes (Exhibit 2). Let's take a closer look at each.

Exhibit 2

Digital transformations are more likely to succeed when companies focus on four critical dimensions of their businesses.



Source: McKinsey analysis

Identify and prioritize critical sources of value

As a first step toward digitization, healthcare companies must clarify where the company provides distinctive value to consumers and stakeholders, and determine how the use of digital technologies could enable those activities. Companies can then determine how best to adjust investments in digital technologies and development approaches to meet the highest priorities. They can also help steer management's attention (always in short supply) in the right direction at the right times during the complicated transformation process.

There are any number of value propositions that companies may wish to target; a lot depends on the company's position in the value chain. A clear source of value emerging for most healthcare companies is an ability to get closer to customers to give them targeted products and services, and engage them in value-based relationships. Some device manufacturers, for instance, may want to create intelligent products—sensor-enabled devices, inhalers, and auto-injectors, for example, that can monitor and manage specific conditions or assist in medical procedures. Pharmaceutical makers could build digital platforms so they could collect and analyze medical data, conduct synthetic clinical trials, manage market access, and accelerate their research efforts.

Some healthcare companies may want to explore ways to mitigate risk using previously isolated data sets. For instance, if manufacturers had greater access to cost-of-care figures, patient outcomes, satisfaction scores, and other metrics, they could devise new types of contracts and risk-sharing models with service providers. Consider that in a typical joint-replacement surgery, the implant itself represents just 15 percent of the total cost of care. Forward-looking manufacturers and providers could use shared, collected data to collaborate on ways to optimize the remaining 85 percent of the cost.

And finally, some companies in the healthcare ecosystem may want to use automation, robotics,

and Industry 4.0 technologies, such as sensor-based equipment and the Internet of Things, to break down walls between business units and functions, thereby speeding up processes and decision making and reducing administration costs.

Build service-delivery capabilities

Once priorities for digital transformation have been set, healthcare companies will need to focus on the means by which they will offer targeted digital products and services to consumers and stakeholders. In most cases, companies must understand user needs in a detailed way and reimagine their work flow and processes as end-to-end activities that can be automated, virtualized, and personalized employing real-time insights. For example, insights about the supply chain—say, the current levels of inventory compared with sales forecasts—could help healthcare companies reduce general and administrative costs and improve customer service. Agile development, data sciences, and customer-experience design can be useful approaches for these companies to explore.

Agile, a software development methodology, has been around for decades, but it is experiencing a renaissance in the digital world. Agile development involves short, fast phases of development, prototyping, reassessment, and adaptation. To make a step in the agile direction, companies will need to modify their organizational structures to be more product oriented, find ways to improve interactions between the business users and IT, redefine roles within the business units and the IT organization, and reconsider their budget and planning models.¹

The agile development approach can be combined with capabilities in data sciences and customer-experience design to rev up the provision of digital services. Colocated business, IT operations, and analytics professionals can jointly develop and deploy products and services in a matter of weeks rather than months or years. Indeed, an at-scale digital healthcare organization can have up to

100 agile teams running projects in parallel at any given time. Of course, companies will need to make the business case for agile to senior management, in an outcomes-driven process. They will also need to think boldly; rather than tag certain projects as agile, senior leaders in business and IT at one large healthcare manufacturer started with a presumption that all new initiatives would be structured as agile projects, unless proved otherwise.

The results of combining agile operations with data science and customer-experience design can be significant. Some device makers are wrapping digital solutions around their products to create better patient outcomes—allowing for predictive diagnostics and early detection in patients with certain types of disease (atrial fibrillation, for instance), or the launch of fully digital surgical units, or remote monitoring of patient care. Meanwhile, some pharma companies are using advanced analytics to discover drugs or identify new uses for established ones.

Modernize IT foundations

Once digital priorities are identified, and digital delivery models discussed, healthcare companies need to examine their IT infrastructure: Is it truly capable of supporting the activities required? Complex legacy technology systems usually become the main sticking point for healthcare companies seeking to go digital. Aging systems have typically been built up in patchwork fashion: new applications and gateways are bolted on to existing ones. The result is spaghetti code and fragmentation, neither of which promotes speed and transparency in IT operations. To support strategic priorities and agile approaches to development, companies will need to modernize their IT foundations.

They must build a solid, reliable data backbone to ensure that all data are managed holistically so that users can access data sets quickly and easily. Access should be governed according to a single framework, and data sets should be harmonized according to business use case. In this way, companies can

establish a “golden source” of truth for critical information relating to pricing, products, customers, invoices, and contracts.

Healthcare companies should also consider ways to build flexibility into their IT infrastructures by looking at software-as-a-service or cloud-based platforms and products. Johnson & Johnson, for instance, is more than halfway toward its goal of migrating 85 percent of its computing workload to a cloud-based platform; the company has been able to manage capacity based on demand, ensure network reliability, and hold costs in check.

Companies should also start incorporating connectivity into their IT architectures—for instance, using sensors and other monitoring technologies to generate and manage data collected from medical devices in the field. Some manufacturers have created internal platforms that let them analyze real-world treatment data to prove the efficacy, safety, and value of their offerings. Other device makers have been able to use data collected from devices implanted in patients to predict treatment outcomes or intervene earlier in certain types of cases.

Of course, companies will need rigorous cybersecurity policies and infrastructures to protect the most relevant pieces of information in the corporation. Leaders can take a series of steps to protect these “crown jewels”—including identifying and mapping digital assets (data, systems, and applications) across the business value chain; assessing risks for each asset, using surveys and executive workshops; identifying potential attackers, the availability of assets to users, and current controls in place; locating the weakest points of security around crown-jewel assets and identifying remedies; and, finally, creating a set of initiatives to address highest-priority risks and gaps in control.²

Strengthen core management capabilities

Any large transformation effort requires that companies strengthen and maintain their capabilities

in several core areas. The first is talent and partnerships. In the case of digital transformation, companies must develop a deep bench of internal staffers with expertise in digital technologies and approaches, while also bolstering their ability to acquire top digital talent from outside the organization. They will need to assess existing recruitment and retention capabilities and modify them to incorporate new skill sets, training needs, and employee requirements. Particularly in the field of healthcare and life sciences, a sense of mission and challenging work assignments may be more critical for attracting top talent than money. Companies may also need to look outside the traditional sources of talent to find the right people—hence, the need to develop partnerships with other companies in the healthcare ecosystem and in other relevant industry clusters.

Another core capability is in financial processes. Healthcare players must ensure that investment priorities are communicated clearly, revisited regularly, and updated as needed, and that sufficient capital is available. Some companies have established funds dedicated to digital initiatives, separate from day-to-day budgets. Companies will also need to create a formal governance structure that is inclusive, where internal and external stakeholders alike have an opportunity to weigh in on digital decisions. We have seen healthcare players address this in a number of ways, including convening external advisory boards and creating internal governance councils.

And last, but never least, culture is critical. Our research suggests that 70 percent of large transformation efforts fail because of poor organizational health. Companies must establish a healthy work environment that is open to new ideas and best practices. Senior leaders should focus all employees on five critical questions: Where do we want to go? How ready are we to go there? What must we do to get there? How will we manage the journey? And how do we keep moving forward? In the spirit of agile development, for example, senior leaders might

convene frequent problem-solving and information-sharing sessions (formal and ad hoc) to help break down barriers between functional and business groups and create more transparency and collaboration.



Like companies in other sectors, the healthcare industry is being disrupted by digitization—and CEOs and boards are taking notice. It's by now a common story: incumbents face threats from digital natives, who are relatively free of legacy constraints and so are able to capture value from nontraditional sources. The winners in digital health, however, are moving quickly to initiate change and capitalize on the battlegrounds cited earlier. They are investing early in promising technologies and risk-sharing relationships with other companies, inside and outside the industry. They are embracing new development and operating models, and relying more on data-driven insights to make critical business decisions. Most important, they are reimagining themselves as digital enterprises—adaptive, collaborative organizations that can keep pace with changes in the healthcare marketplace. The four core principles for change that we've outlined can help companies join the ranks of the winners. They can tackle their transformation programs successfully, creating better patient outcomes and more value for all stakeholders. ■

¹ Santiago Comella-Dorda, Swati Lohiya, and Gerard Speksnijder, "An operating model for company-wide agile development," May 2016, McKinsey.com.

² Piotr Kaminski, Chris Rezek, Wolf Richter, and Marc Sorel, "Protecting your critical digital assets: Not all systems and data are created equal," January 2017, McKinsey.com.

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