Healthcare: A digital divide?
Insights from PwC's 2015 Global Digital IQ® Survey

Healthcare is arguably one of the world's most information-intensive sectors, and the opportunities to improve quality, encourage affordability and enhance the consumer experience are vast. Digital can help the sector tackle global challenges as the population grows and ages, and healthcare costs rise. There's a lot at stake, but PwC's 2015 Global Digital IQ® Survey shows that the sector is currently behind the curve. Both providers and funders need to be genuine leaders, not laggards, if they are to realise the full potential of digital and turn it into a business advantage that benefits the quality of life across the broader population.

The Global Digital IQ Survey explores what business leaders can do to ensure their digital investments deliver and sustain value. Today's digital enterprise spans many dimensions, from how businesses connect externally, to how they operate internally. The survey analysed more than two dozen of these factors, covering strategy, innovation, and execution. In our report, *Lessons from digital leaders: 10 attributes driving stronger performance*, a few key trends stood out. We learned that most organisations are focused on the present, not the future when it comes to digital; in other words, they're investing in technology to improve their business today, rather than using it to gain competitive advantage for tomorrow. And that's despite the strong enthusiasm for digital technology within many organisations. We also learned that many companies are held back by what we call a 'slow-tech' approach.

This report is a summary of our key findings in the healthcare sector, based on a survey of 68 funder and provider executives in 21 countries. For more information, see 'About the Healthcare sample'.

Strategy: The right prescription?

There's a digital divide between funders and providers

The results of the survey suggest some fairly profound differences in the ways healthcare funders and providers approach digital—not just in how they're using it, but even in how they understand it.

Put broadly, funders see digital from an *external perspective*, using websites, apps and social media to manage their relationships with customers, market their services, and identify new trends. In other words, as a consumer-facing tool. Providers, on the other hand, currently see digital *internally*, with a focus on using it in areas such as clinical operations, and reporting (for example, electronic medical records). Thus 58% of providers define digital as 'all the investments we are making to integrate technology into all parts of our business', which is the top score across all sectors and much higher than the 34% figure for funders. Meanwhile 43% of funders define digital as 'all customer-facing technology activities', which is more than double the number of providers, who responded at 21%.

89% of funders say their digital strategy is agreed and shared at C-suite level, compared to an overall cross-industry average of 80%, but only 64% of providers say the same. And 80% of funders say their CEO is a champion for digital, compared to only 67% of providers. Yet more providers than funders see themselves as proficient on digital—27% gave themselves 9 out of 10 or better as a digital IQ rating, compared to only 18% for funders. The average across all industries is 27%.

However, our experience suggests that the range and effectiveness of digital activities varies widely in both aspects of healthcare, with some companies leading the field while other businesses do much less, and often in a rather scattergun way. Even those with a lot of projects underway often aren't linking them up under any sort of cohesive consumer, clinical, business, or IT strategy. And
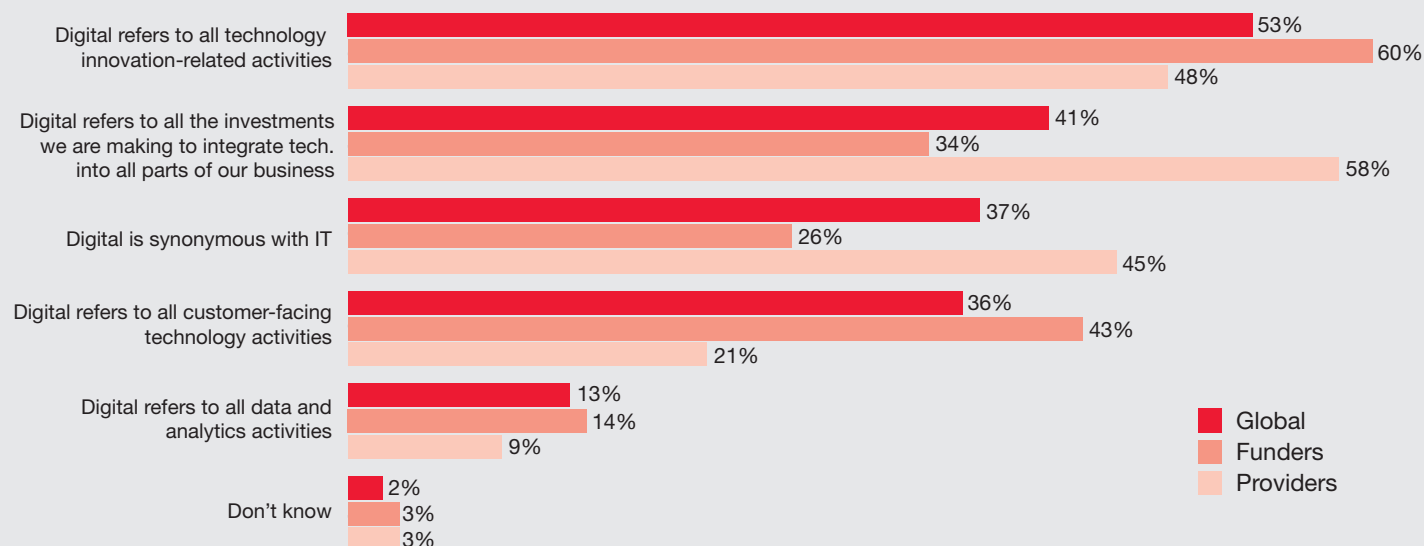
27%
of Healthcare providers

ranked their organisation 9 out of 10 or better on their digital IQ score, compared to 18% of funders

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the rate of deployment varies: funders are more deliberate so they reap sufficient returns while providers tend to fund early stages of development to achieve their mission.

There's a need for more holistic thinking, with an integrated strategy driving effective execution, rather than the tactical deployment of apps or initiatives that don't necessarily take the organisation in the right direction. The survey results reflect these mixed feelings—only 57% of funders and 48% of providers say their digital strategy is integrated into their overall corporate strategy, suggesting that healthcare companies recognise that much work needs be done to deliver a comprehensive digital enterprise. There also seems to be some inconsistency with how funders and providers perceive the purpose of their digital investments. When asked to rank their top three priorities in terms of the value they expect from their digital enterprise investments, 43% of funders and 48% of providers ranked growing revenue as their number one choice—beating other selections by a good margin. Yet only 14% of funders and 27% of providers say they expect their investments to create better consumer experiences.

Providers and funders differ on how they interpret digital, with funders placing more focus on how digital impacts their customer activities

	Global	Funders	Providers
Digital refers to all technology innovation-related activities	53%	60%	48%
Digital refers to all the investments we are making to integrate tech. into all parts of our business	41%	34%	58%
Digital is synonymous with IT	37%	26%	45%
Digital refers to all customer-facing technology activities	36%	43%	21%
Digital refers to all data and analytics activities	13%	14%	9%
Don't know	2%	3%	3%

Source: PwC, 2015 Global Digital IQ® Survey, Sample: 68 healthcare respondents; Bases: 1,988
Q: How does your organisation define digital?

A huge range of opportunities is opening up for providers—the challenge is prioritising them

Healthcare provision is one of the sectors that stands to gain the most from the digital revolution. As the box-out on page 7 shows, there's hardly any aspect of provision that can't be made more clinically and/or cost effective for both consumers and care providers by the smart use of digital and the focused application of data analytics.

From health apps to telemedicine, remote health monitoring to managing the patient journey, the possibilities opening up are staggering—the challenge is to choose among them, and decide where and how to invest. Solutions also need to comply with local regulations, provide evidence-based benefits and offer sufficient data security to be effective. Some companies are looking to partnerships with pharmaceutical and medical device manufacturers to do this, others are simply paralysed into inaction. The apparent contradictions in some of the survey results may be a reflection of this. Again, an overarching strategy is key here, and an operating model that allows the range of different digital opportunities—both internal and consumer-facing—to be evaluated and prioritised.

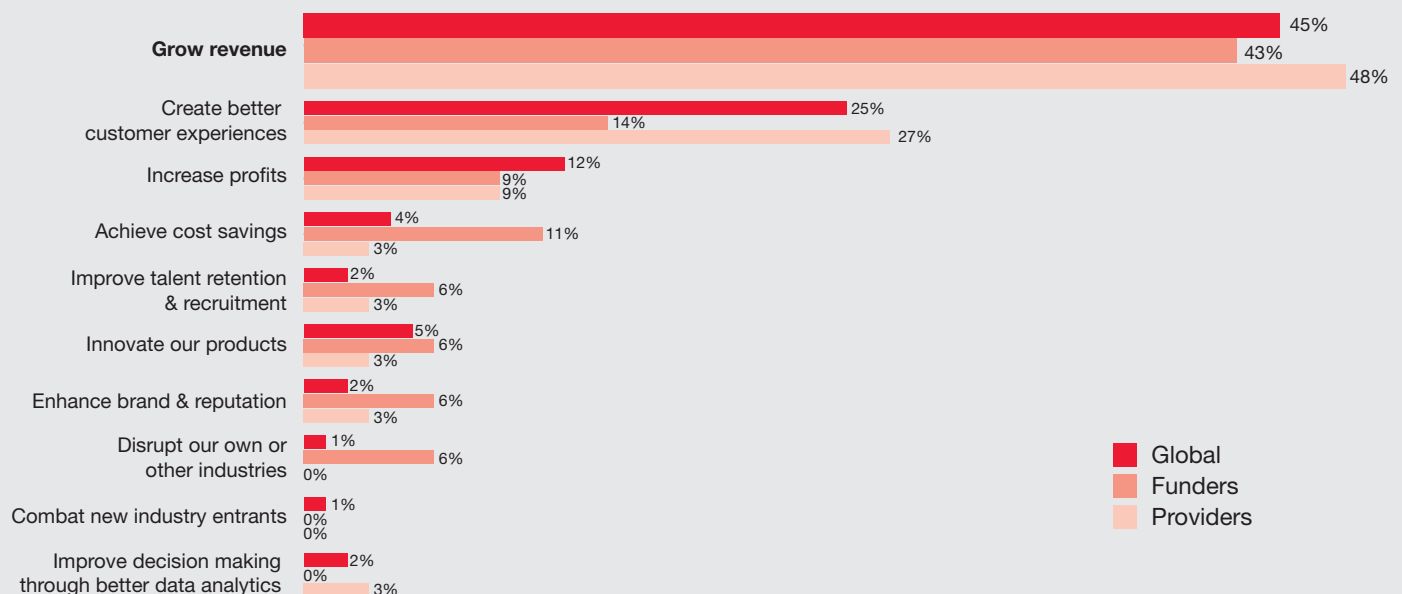## Funders are investing in consumer engagement—but how well is it working?

Funders are pouring a lot of time and investment into consumer-facing digital technologies, but it's not clear how effective some of this is. The focus of much of the work done in this area is almost exclusively on using technology to support their brand and improve the consumer experience.

Both of these are necessary, and make clear business sense, but they aren't sufficient in themselves. More needs to be done looking at the nuts and bolts of their business model, and how digital can reduce the cost of care. For example, funders would benefit considerably by focusing on ways digital can be applied to the different stages of a care pathway, such as replacing face-to-face consultant appointments with remote consultations, which make sense for patients too. There are more examples in the box-out on page 7.

There's also a small but growing group of healthcare companies which are developing integrated healthcare models and using digital to help them do it. Kaiser Permanente is a good example. Their KP HealthConnect® is a real-time database of patient records, connecting more than 611 medical offices and 37 hospitals, and linking patients to their healthcare teams. The more data this system gathers, the more useful it becomes, and Kaiser Permanente is using it to spot trends, track physician performance, and improve clinical care.[1] The system is also used to coordinate follow-up care after patients leave the hospital, such as physiotherapy or exercise regimens.[2] The integrated model of healthcare provided by Bupa's public-private partnership in the Manises region of Spain also makes full use of electronic records to coordinate and improve patient care, and at a national level, Singapore has enabled its citizens to access their personal medical records through an online hub.[3]

Revenue growth is the number one choice of providers and funders as one of the benefits of their digital enterprise investments

	Global	Funders	Providers
Grow revenue	45%	43%	48%
Create better customer experiences	25%	14%	27%
Increase profits	12%	9%	9%
Achieve cost savings	4%	11%	3%
Improve talent retention & recruitment	2%	6%	3%
Innovate our products	5%	6%	3%
Enhance brand & reputation	2%	6%	3%
Disrupt our own or other industries	1%	6%	0%
Combat new industry entrants	1%	0%	0%
Improve decision making through better data analytics	2%	0%	3%

Source: PwC, 2015 Global Digital IQ® Survey, Sample: 68 healthcare respondents that ranked selections as #1. Bases: 1,988
Q: What value do you expect from your digital enterprise investments?

Issues facing Healthcare—and how digital can help

The population is ageing

The world's population is expected to increase by one billion by 2025, and 300 million of that increase will be in those aged 65 or over.[4] The world is having to adapt to a population that has four generations, not three, and a growing number of very elderly people needing residential care and treatment for chronic conditions. The current model of aged care is already under strain—according to the Organisation for Economic Cooperation and Development (OECD), the projected costs of public health and long-term care are set to rise from 6% of GDP in 2010, to 14% of GDP by 2060 for OECD and BRIIC countries (Brazil, Russia, India, Indonesia, China and South Africa).[5]

But new digital business models could transform how older people receive care. From the remote monitoring of specific biometrics, to the use of sensors that can detect falls in the home, to using the Internet of Things to keep tables on sleep patterns, drinking, and the taking of medication. Likewise, remote consultations can avoid the need for hospital visits, which are both demanding and traumatic for very old people, and can be more economical for the system.

Healthcare costs are rising

It isn't just an ageing population that's pushing up costs. Medical science continues to make advances but these new treatments cost money. Cancer is an obvious example. According to Franco Cavalli, chair of the World Oncology Forum, "Every year cancer drains an estimated $2 trillion from the world economy in terms of lost output and the cost of treatment, equivalent to around 1.5% of global GDP…".[6] Digital can help keep costs down in other areas of healthcare, thereby releasing funds for new treatments. This 'industrialisation' of healthcare can also help improve quality and cut waste.

Expectations are rising too

Across the world, people have higher expectations of their healthcare providers than ever before, and as the middle class grows, these pressures can only intensify— nearly 65% of the global population will be middle class by 2030.[7] People are using digital technology to make themselves better informed, and take more control of their own health. Other industries—like banking and tourism— are already adapting to these new digi-savvy consumers. Healthcare needs to catch up.

49% of consumers already say they expect mHealth technologies to change how they manage their overall health, and 59% of patients say these services have replaced some visits to doctors or nurses.[8] There's already a huge range of digital technologies designed to help people do this, from web-based communities that help people manage specific conditions like diabetes, to apps that allow users to find health facilities in their area or support healthy lifestyles. But for lifestyle/wellness digital solutions to be cost effective the data needs to be transparent and interoperable across the healthcare ecosystem. This means having a strong business case that is supported by evidence-based medicine.

Emerging markets need basic care

While the expectations of the middle class are rising, there are still huge numbers of people in emerging markets who have poor access to healthcare. Digital healthcare can augment many aspects of care at extremely low cost, compared to traditional approaches. In India, for example, where up to 700 million people have no access to healthcare, but half the population have a mobile phone, the Apollo Hospitals Group is providing remote analytics through mobile phone apps, and Aravind Eye Hospitals are using internet kiosks, video conferencing, and tele-ophthalmology software to diagnose patients remotely.[9] In many cases information technology, telecommunications and healthcare companies are coming together to offer solutions. For example, Orange, a telecommunications company based in France, partnered with the non-profit organisation m-Pedigree to tackle the problem of counterfeit drugs in Kenya by using a text message platform.[10] Each pack of medicine has a batch number and expiry date, and a one-time code that is only revealed by scratching the covered ink. Patients and clinicians in the region can check whether medication is fake by sending a single SMS of the medicine's unique code, which sends an instant response verifying its authenticity.

Execution: Processes, priorities, and people

There may be huge digital opportunities for healthcare in theory, but putting it into practice is much harder

Personal healthcare data is both sensitive and lucrative—it demands high prices for hackers in the black market[11]—which means cybersecurity and personal data protection should always be top of mind. 74% of funders and 79% of providers say they proactively evaluate and plan for security and privacy risks in their digital projects, which is good, but still surprisingly far behind other sectors, like Retail (81%), Consumer Goods (81%), and even Hospitality & Leisure (80%). 58% of providers say that digital has created new data security and privacy risks for them, compared to 40% of funders and the global average of 45%. Funders and providers said that their digital strategy has created other risks for them too, though there are some interesting differences between the two: 45% of providers cited new regulatory and compliance risks, which makes sense, but only 23% of funders said the same. New financial risks are higher for funders than providers, (54% versus 36%), though that makes sense given that most funders are essentially offering an insurance product. The finding further demonstrates how providers tend to focus more on internal-facing business priorities than funders, which tend to have an external consumer outlook.

Another practical challenge is the sheer volume of data that can be generated—healthcare companies aren't yet collecting data as efficiently as they could be, and even fewer are using it to improve both their services to consumers and their own operational efficiency. When respondents were asked about the types of data that could help improve their competitiveness a surprisingly low number of providers cited new sources of value-added third-party data such as demographic and behavioural information (58% against an overall average of 71%), and only 49% of funders valued mobile

consumer interaction data, compared to an average of 63%. On the other hand it's not surprising at all that 64% of providers see the potential of data from the Internet of Things, against an average of 57% across all industries.

It's all about asking the right questions about the collected data, because otherwise information will never turn into insight. There's a need for more standardisation across the whole sector so that funder records can talk to provider systems, in order for patients to receive better and quicker service that is more tailored to their needs at a more transparent cost. Cumbersome legacy information systems are often an obstacle here, along with doctors' reluctance to shift to new ways of doing things.
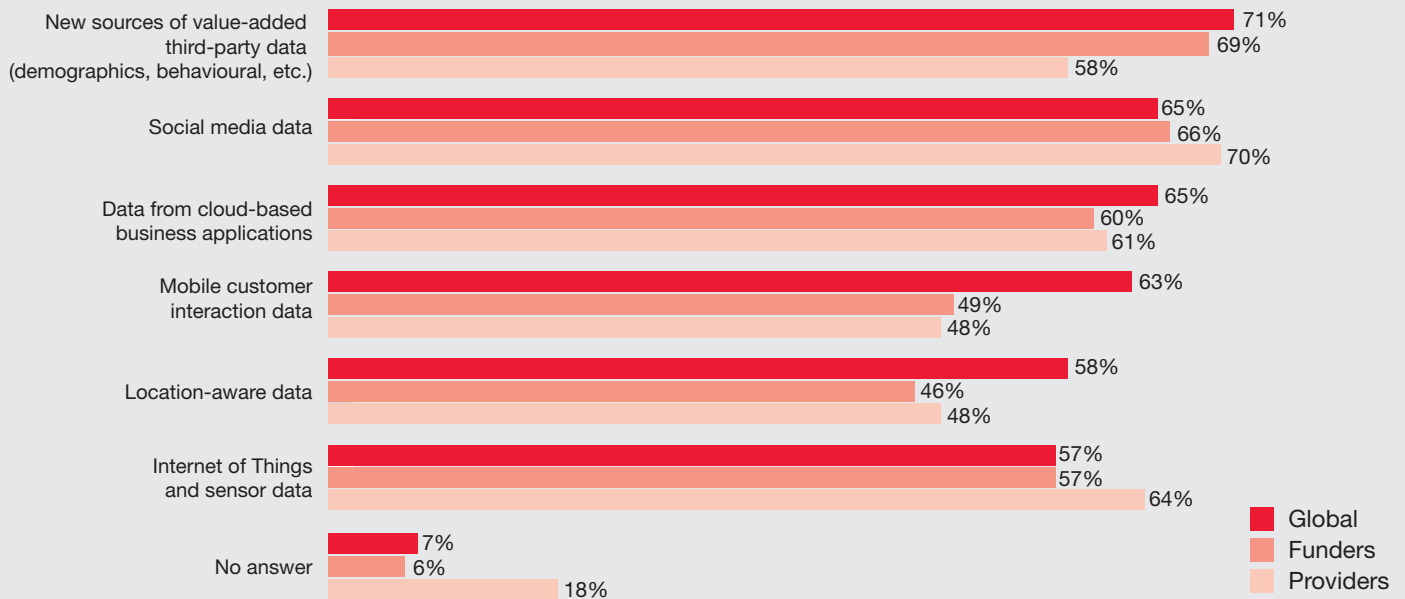
As all this suggests the practical challenges for providers are usually more complex than those for funders, which may explain why 70% of providers have a dedicated team for digital innovation, compared to 60% of funders, and why providers are more concerned about the return on investment than funders (52% of providers versus 43% of funders). Almost three-quarters of funders, however, were receptive to engaging with external sources for new ideas in applying emerging technologies, compared to 67% of providers, which is consistent with the suggestion that funders are generally more collaborative.

57%
of Healthcare funders

say their digital strategy is incorporated into their overall corporate strategy, compared to 48% of providers

Healthcare executives see social media data as important

New sources of value-added third-party data (demographics, behavioural, etc.)
- Global: 71%
- Funders: 69%
- Providers: 58%

Social media data
- Global: 65%
- Funders: 66%
- Providers: 70%

Data from cloud-based business applications
- Global: 65%
- Funders: 60%
- Providers: 61%

Mobile customer interaction data
- Global: 63%
- Funders: 49%
- Providers: 48%

Location-aware data
- Global: 58%
- Funders: 46%
- Providers: 48%

Internet of Things and sensor data
- Global: 57%
- Funders: 57%
- Providers: 64%

No answer
- Global: 7%
- Funders: 6%
- Providers: 18%

Legend: Global, Funders, Providers

Source: PwC, 2015 Global Digital IQ® Survey, Sample: 68 healthcare respondents; Bases: 1,988
Q:How important do you believe effective use of each type of data will be to your competitiveness?

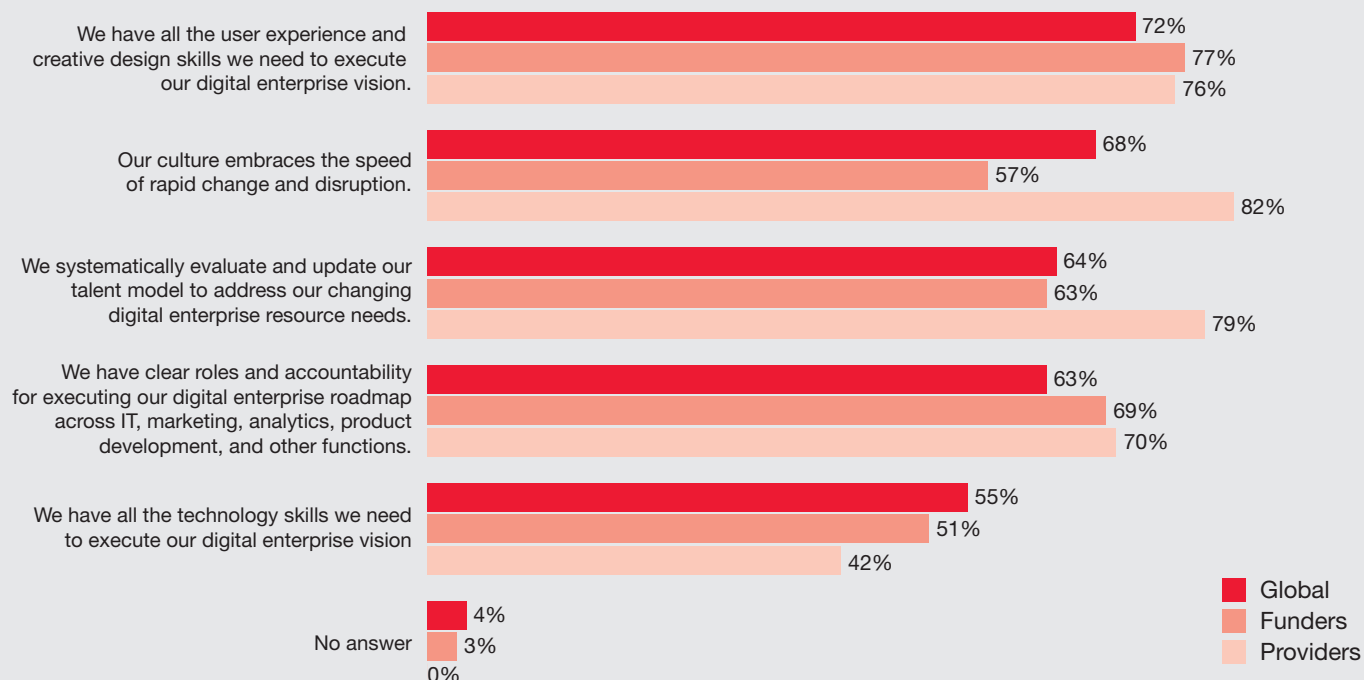## Skills shortages aren't a problem for providers at the moment—but they could become so

45% of providers are confident that having properly skilled people is not currently a barrier to the execution of their digital strategy. This is the highest of any non-technological sector, and compares to a cross-industry average of 30%, and 26% for funders. On the other hand, 70% of providers see talent recruitment and retention as an emerging issue, compared to just 43% of funders. In fact, both expect their digital investments to help them improve their talent retention and recruitment efforts (70% of providers and 69% of funders).

The different internal and external focus of funders and providers is reflected in their skill-sets. 82% of providers are confident about their data analytics capabilities, which is one of the highest scores for any sector, and compares to 63% of funders and an average of 72% overall. The same percentage of providers believe data analytics is crucial to their business, and also claim they deliver their digital enterprise projects on time, on budget, and within

planned scope. However, as we've already discussed, their confidence may be misplaced and anecdotal evidence suggests providers are not as far ahead of other sectors in this area as these figures would imply. Likewise 67% of providers believe they effectively utilise all the data they capture to drive business value, compared to an overall average of 58%, and this, too, is more likely to reflect what they'd like to believe than a genuine cross-sectoral leadership.

Providers are much less sure of their creative strategy and digital design skills, which probably reflects the fact that most of them are not using digital to reach consumers (58% are confident of these skills compared to 63% for funders and the average across all industries). Funders by contrast put more emphasis on user experience and human-centred design skills (69%, compared to 61% for providers). They are also more confident about their ability to collaborate internally—funders say they work effectively across their organisation and with external partners to plan and deliver digital investments.

Providers and funders believe they have the appropriate skills to execute on their digital strategies

We have all the user experience and creative design skills we need to execute our digital enterprise vision.
- Global: 72%
- Funders: 77%
- Providers: 76%

Our culture embraces the speed of rapid change and disruption.
- Global: 68%
- Funders: 57%
- Providers: 82%

We systematically evaluate and update our talent model to address our changing digital enterprise resource needs.
- Global: 64%
- Funders: 63%
- Providers: 79%

We have clear roles and accountability for executing our digital enterprise roadmap across IT, marketing, analytics, product development, and other functions.
- Global: 63%
- Funders: 69%
- Providers: 70%

We have all the technology skills we need to execute our digital enterprise vision
- Global: 55%
- Funders: 51%
- Providers: 42%

No answer
- Global: 4%
- Funders: 3%
- Providers: 0%

Legend:
- Global
- Funders
- Providers

Source: PwC, 2015 Global Digital IQ® Survey, Sample: 68 healthcare respondents; Bases: 1,988
Q: To what extent do you agree with the following statements about organisation and skills?

Conclusion

To sum up the survey findings: Healthcare providers have a high opinion of their digital capabilities but in practice, they are lagging behind other industries. While there are instances of good practice and new ideas, many have digital strategies which are insular and fragmented, and these companies often define and deploy digital in a very narrow way. It's much more than electronic medical records, valuable though those are. Improving the patient experience by making their treatment more streamlined and convenient, and joining up the different stages of their journey, is a very good thing, but it's just scratching the surface of what digital could do.

Funders are currently focused on how digital can help them engage better with their members, and recruit new ones. That makes sense, as it's a key business imperative. But there's more that can be done here, especially if funders integrate their systems with healthcare providers, which would allow them to offer a more personalised and a more holistic approach, rather than one based on individual areas of care, or specific conditions. Digital could also help streamline funders' internal operations, and partnering with new market entrants could prompt new ideas and new ways of working.

Overall, digital technology is still under-utilized in healthcare systems around the world partly because there are still outstanding questions about its usage and efficacy. Interoperability between providers, funders, patients and regulators is still a prevailing concern as data is mostly heterogeneous, and integration has been slow and non-ubiquitous. Traditional behaviours and the reluctance to change is another, more insidious reason why there has been a slow uptake to evolve. Yet patients are starting to use technology as a tool to achieve greater accountability for their health, and regulators are also becoming more engaged. The industry must evolve or risk being left behind.

What does this mean for your business

Partner with digital leaders, new entrants or each other

Third-party digital leaders and new entrants to the market, especially non-traditional companies from outside the healthcare industry, can offer innovative ways of doing business. Their ideas can challenge the status quo and may run counter to long-time practices.

Funders and providers can also mutually benefit from collaborating with each other. Providers—with their focus on internal operations—can impart knowledge about using digital to streamline reporting. Meanwhile, funders can provide ways digital can improve the consumer experience and deliver end-to-end value.

Involve clinicians and healthcare professionals in the development of health digital systems

Providers need to involve physicians and other specialists from areas including pharma, academia and biotechnology as early as possible in the design of new digital systems, and make these easy and intuitive to use. Those developing the systems likewise need to understand how healthcare and hospitals work, and what doctors require to encourage different ways of working. The greatest challenge is not the technology itself but overcoming entrenched cultural mind-sets and long-established behaviour. Sometimes the best way to do this is by changing elements of a system gradually—and getting buy-in from healthcare professionals, clinicians and other users—rather than a complete overhaul of the entire IT infrastructure, which creates risks of its own.

Have a digital strategy that embraces every aspect of the business, both internal and external

Many solutions fail because organisations have been more focused on delivering a technical 'innovation' rather than solving a problem. Providers and funders should have an operating model that takes into account the entire business including change management, clinical needs, reimbursement, governance, vendor management and measurement.

Develop a set of protocols with partners

Data interoperability has been a difficult issue to resolve—it requires a confluence of all parties including regulators, providers, funders and government organisations. One way to address this challenge is to have partners agree to a set of standards that allows consistency across different systems, while taking into account limitations that may inhibit the information from being useful. And when developing an integrated healthcare system, start small, and build an infrastructure which can scale up.

Form a 'federation' of digital innovators

Bigger chains can afford a dedicated team for digital innovation, but what about small hospitals, ambulatory networks or funder organisations that may not have the same access to resources? A possible approach is to combine efforts with similar sized organisations and pooling resources to attract the right skills and talent.

Consider low-cost, nimble digital solutions

Companies concerned about their return on investments may want to consider products from smaller, boutique providers that may be easier to implement and more cost effective than a big, wholesale system offered by established health information technology suppliers. One tactic is to adopt and integrate hardware and software from multiple sources instead of relying on a sole incumbent so one can easily adapt to changing needs and circumstances.

Endnotes

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2 PwC, *Healthcast: Global Best Practices in Bending the Cost Curve*, (November 2012), p. 43.

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4 UN Population Division, *World Population Prospects*, 2012.

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6 "World leaders gathering at Davos face calls for bold action to turn the tide on cancer" news release, (14 January 2014), http://www.asco.org/press-center/world-leaders-gathering-davos-face-calls-bold-action-turn-tide-cancer

7 Mario Pezzini, "An emerging middle class," OECD Observer, 2012.

8 Economist Intelligence Unit, *Emerging mHealth: Paths for growth*, 2012.

9 PwC, *Healthcast: Global Best Practices in Bending the Cost Curve*, (November 2012), p. 46; Aravind Eye Care System website, (4 April 2016), http://www.aravind.org/default/servicescontent/ClinicalServices.

10 Orange Healthcare website, (15 February 2016), http://healthcare.orange.com/eng/discover-e-health/all-folders/mHealth.

11 Robin Erb, "Data breaches put patients at risk for identity theft", *USA Today* (12 February 2012), http://usatoday30.usatoday.com/news/health/story/health/story/2012-02-12/Data-breaches-put-patients-at-risk-foridentitytheft/53065576/1.

About the Healthcare sample

We've been conducting Digital IQ since 2007 and this year marks our seventh annual survey of business and IT executives globally. This year's survey was conducted July through September 2015 and included 35 funder and 33 provider respondents from 21 countries. Respondents were asked to categorise themselves in industry segments, including payer or provider. However, many of the healthcare sample are from countries whose healthcare systems are government financed or administered and the term "payer" is unfamiliar in these regions. As a result, we have re-labelled "payer" respondents as "funder" in the report for greater clarity.

About PwC Digital Health

An increase in the use of technology and analytics has helped transform the healthcare industry. Digitally enabled care is no longer a nice to have, but rather a fundamental business imperative. Industry leaders across governments, health plans, and hospitals all see major shifts in how care is being delivered. Digital technology bridges time, distance and the expectation gap between consumers and clinicians.

To really use technology effectively in health, we need systems to interact with one another to provide the data required to make informed decisions about the delivery of care.

PwC works with organisations on end to end delivery—from IT strategy to assisting with implementation to evaluation through solution assessments and system audits.

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