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Greater than the sum of their parts

How cloud and AI work together
in the healthcare sector

In collaboration with:



Introduction

The COVID-19 pandemic has accelerated adoption of virtual care, transformed operations for both healthcare providers and payers, and sped up investment in new technologies—changes that are likely to endure even when the crisis abates. Cloud and AI—and the combined use of those technologies—will be critical to this transformation effort and should ultimately support improvements to the health and wellness of entire populations.

Oxford Economics and IBM recently surveyed 6,000 senior IT executives, including 807 from healthcare providers and 393 from healthcare payers, to better understand strategies for cloud and AI adoption. Key findings from our analysis of healthcare responses include:

- Healthcare organizations are steadily adopting cloud. Many are shifting to hybrid cloud and hybrid multicloud along the way—though data governance and regulatory considerations continue to boost private clouds.
- Payers and providers have different aims for implementing cloud and AI. Modernization is a focus for both, but providers tend to be more focused on customer (i.e., patient) experiences.
- Organizational challenges stall technology adoption. Difficulty deploying adoption plans and managing change are top obstacles to cloud and AI implementation.
- Cloud is seen as critical to AI strategy in a range of areas, and already is contributing to ROI in terms of both business and technical value for organizations in many sectors. Two groups of respondents in our cross-industry sample—we call them Cloud Strategists and Cloud and AI Unifiers—are further ahead in their adoption of the technologies. Members of these groups report stronger performance in some important areas, though many have work left to do before they realize ROI from their efforts.

About the survey

Total sample: 6,000 CIOs, CTOs, VPs of IT, and equivalent titles from organizations using cloud and AI in some capacity

Sectors covered: Healthcare providers and payers, telecommunications, retail, manufacturing, and financial services

Countries covered: Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Costa Rica, France, Germany, India, Italy, Japan, Mexico, New Zealand, Panama, Peru, Puerto Rico, Saudi Arabia, Singapore, South Africa, South Korea, Spain, United Arab Emirates, United Kingdom, and United States

Dates fielded: May through August 2020

The big shift to cloud

Healthcare providers and payers around the world are moving to the cloud, with many turning to hybrid cloud and hybrid multicloud environments as they make the shift.

The health sector faces unique challenges around technology adoption, in part because the stakes are higher—the consequences of failing include meaningful effects on quality of patient care and health outcomes. Top challenges to cloud implementation for healthcare providers include difficulty deploying an adoption plan, data governance considerations, security and regulatory issues, and change management. Obstacles look similar for healthcare payers, but also include barriers related to previous platform choices.

Despite challenges, many are steadily moving to the cloud. Healthcare respondents report a steady uptick in the average number of applications hosted in the cloud, from roughly one-fifth two years ago to just under 40% today and well over half anticipated in two years. These organizations take a variety of approaches to cloud hosting environments. While the majority have shifted to hybrid cloud or hybrid multicloud, many still rely on all-private or all-public environments, which could in part be based on regulatory, privacy, or data-sharing needs.

Some providers and payers are further ahead in their adoption of cloud (we call these respondents **Cloud Strategists**; almost one-quarter of healthcare organizations in our sample qualify) or both cloud and AI (we call these respondents **Cloud and AI Unifiers**; approximately 8% of healthcare organizations qualify). Members of these groups are more likely to say their technical operations are effective in some important areas, but most have yet to realize substantial ROI from their combined cloud and AI efforts—a sign that even leaders have much work left to do.

Adoption strategies look different across the sector. For example, the largest providers—those with more than 20,000 employees—are more likely to be in an all-private environment today (33%, vs. 17% of smaller providers); in two years, fewer expect to be in an all-private environment (24% vs. 12%). Respondents in hybrid and hybrid multicloud environments tend to be more satisfied with that environment than users of public or private clouds, a trend consistent with responses from other sectors.

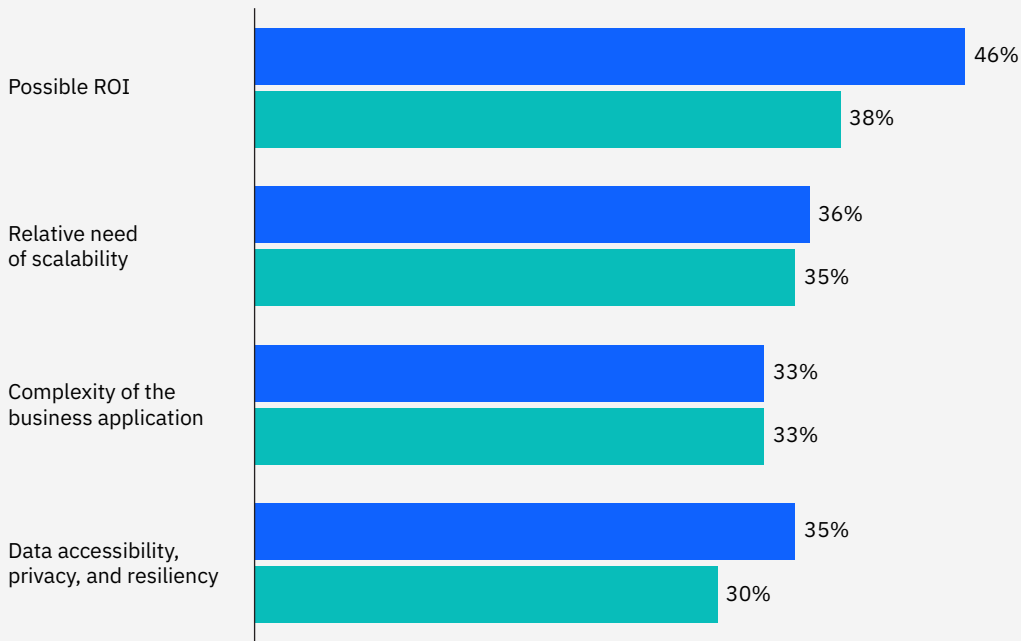
Ultimately, quantifiable returns tend to drive strategy. ROI is cited as the top influence on decisions about where to build and host applications, followed by relative need of scalability; data accessibility, privacy, and residency; and complexity of the business application.

Fig. 1: How healthcare makes hosting decisions

Q: In general, which factors determine how your organization hosts, builds, and/or manages work in the cloud, vs. which it keeps on-premises? Top four responses shown.

Base = 807 healthcare providers and 393 healthcare payers

Healthcare payers
Healthcare providers



A growing focus on AI

AI promises meaningful improvements to patient diagnoses and treatments as well as overall population health, as providers and payers alike can use AI and AI-powered tools to identify trends and make decisions with predictive analytics, support physicians, and apply automation to free up employee time for strategic work.

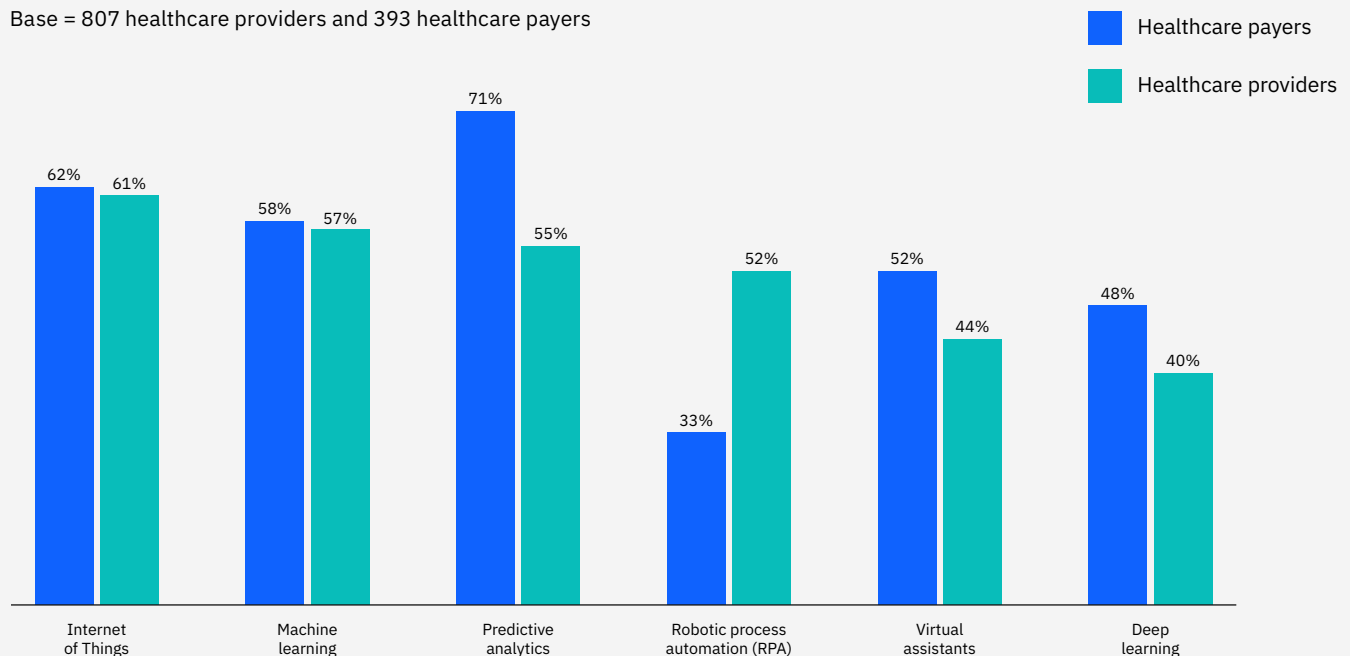
Improving customer (or patient) experiences; modernizing processes, products, and services; automating workflows; and becoming more agile are top goals for implementing AI for healthcare payers. Similar goals are cited as priorities among healthcare providers.

Different organizations—and even individual executives—have varying definitions and goals for AI and the subset of emerging technologies it enables. When asked which AI domains their organization is investing in, providers are most likely to mention Internet of Things, machine learning, predictive analytics, and robotic process automation (RPA). Payers, meanwhile, stand out for their focus on predictive analytics—likely for risk management—but also are investing in a range of other areas.

Fig. 2: Defining AI investment

Q: In which of the following AI domains is your organization investing? Top six responses shown.

Base = 807 healthcare providers and 393 healthcare payers



AI challenges go well beyond the bounds of IT. Top-cited obstacles among both payers and providers include difficulty managing change and deploying an adoption plan (meaningful barriers among other sectors in our sample, too). And as providers deal with ongoing disruption from the pandemic—they are more likely to say they are hiring employees and reskilling workers for new technologies in response to COVID-19—attention to these management issues will become even more critical.

These obstacles often vary based on region, size, or other factors. The largest providers in our sample are more likely to cite data governance challenges as an obstacle (38%, vs. 26% of smaller providers), while the smallest—those with under 1,000 employees—are more likely to cite budget issues (32% vs. 10% of larger providers).

The cloud and AI payoff

Many healthcare organizations see their cloud and AI tactics as part of a unified strategy, and are expecting returns. While healthcare respondents are less likely than some other sectors in our sample to qualify for the most mature group (only about 8% are Cloud and AI Unifiers), some are beginning to report payoffs from their technology investments.

Top advantages of using cloud for AI include better customer experiences (cited as a major advantage by 37% of providers and 39% of payers) and more flexibility (37% each).

At one large health system in the United States, the Chief Medical Information Officer expects major transformation around patient care as a result of their adoption of cloud-based artificial intelligence applications. These include natural language processing, to take notes and process orders during provider-patient meetings; automated MRI readings, to support diagnoses for stroke victims; and pre-screenings for dermatology patients.

These applications help explain why many are already thinking of cloud and AI as part of a unified strategy. Roughly three-quarters of providers and payers see a unified platform for cloud, data, and AI as critical to their organization's success in the long term, and a similar number say cloud is a critical foundation for data management and AI. Cloud is more likely to be used in combination with AI than any other technology, including IoT, mobile devices, and predictive analytics, with 77% of providers and 73% of payers saying so.

Our analysis of the survey data identified two groups of outperformers ahead in adopting cloud and AI.

- To qualify for the **Cloud Strategists** group, respondents must report a higher-than-average percent of applications in the cloud two years ago, today, and expected in two years. 21% of healthcare providers and 26% of healthcare payers qualify.
- To qualify for the **Cloud and AI Unifiers** group, respondents must meet the above criteria; report that more than one-fifth of new applications incorporate AI; use cloud in combination with AI; and agree that a unified platform for cloud, AI, and data is critical to success. 7% of healthcare providers and 9% of payers qualify.

Cloud and AI Unifiers are more likely to say cloud accelerates ROI in a range of areas, but payers and providers from these groups still have substantial work to do to realize value from their cloud and AI efforts.

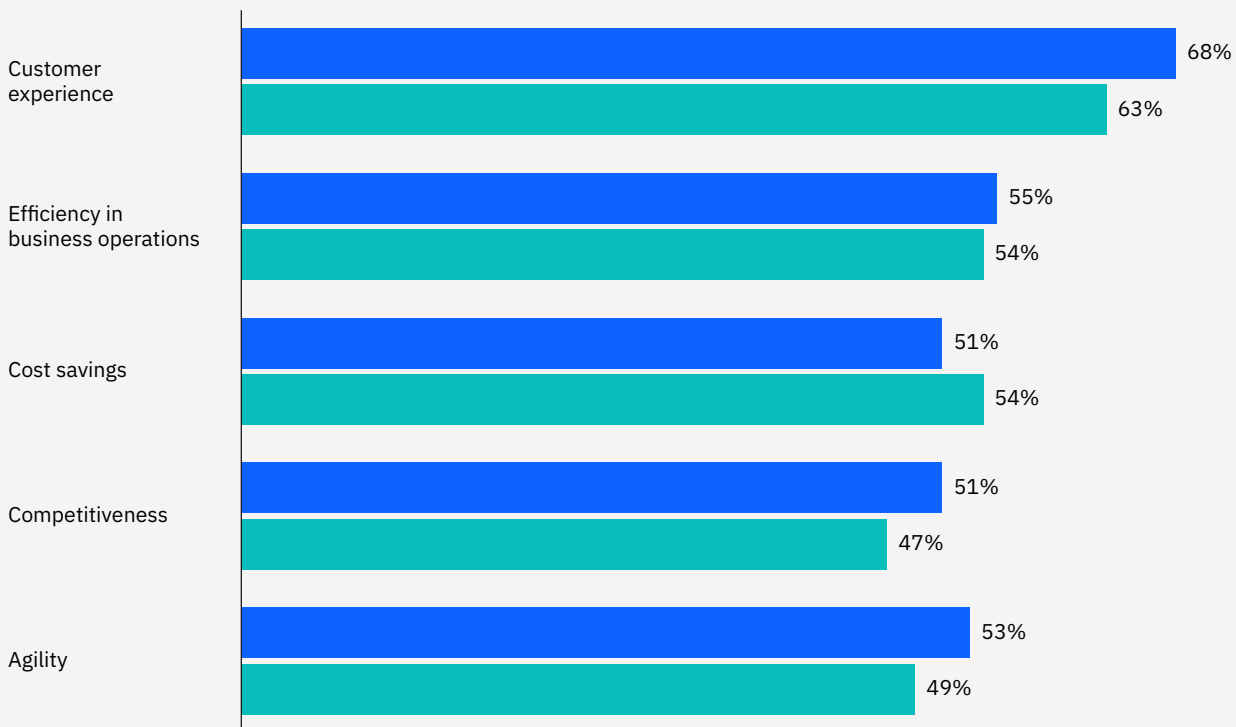
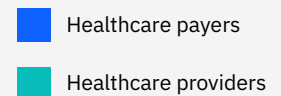
Ultimately, investments in cloud should support success in AI and feed those positive returns back into cloud and data management, creating a kind of virtuous circle of ROI. Many respondents see their use of cloud as important to determining which AI projects to pursue, scaling AI applications, facilitating data-sharing, and expanding the network of AI developers—numbers broadly in line with cross-sector averages.

Some are quicker to see payoffs than others, likely a reflection of their maturity and resource availability. While 42% of healthcare providers in the sample say cloud is substantially or critically important to the overall success of AI applications, the largest providers (those with more than 20,000 employees) are much more likely to say this is the case.

Fig. 3: How cloud accelerates ROI

Q: To what extent has your organization’s use of cloud enabled or accelerated your positive return on investment (ROI) in the following areas? “To a significant extent” and “Meaningfully” responses; top five responses shown

Base = 807 healthcare providers and 393 healthcare payers



Conclusion

The rapid adoption of cloud and AI is expected to transform healthcare payers and providers for years to come as the sectors look to sustain adoption of virtual care following the pandemic, improve performance against important metrics, and support overall population health and wellness.

For more information about how companies across sectors are adopting cloud and AI, and best practices for implementing the technologies, [see the full research report](#).

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