

Building the Intelligent Organization

Artificial intelligence (AI) is recognized as a technology of vital strategic importance to enterprise leaders. The majority of respondents to our global survey have begun the AI journey, reporting that they are in the planning stages or have already piloted or implemented the technology. And organizations are stepping up their financial investments, with 62% reporting increased spending on AI in the past year (see Figure 1, “Spending on Emerging Technologies”).

Our survey of more than 2,200 leaders, managers, and contributors across a wide range of industries and geographies reveals how the drive to implement AI is reshaping organizational culture and processes and creating new mandates for CIOs and other technology leaders. It also provides insight into organizations’ perceptions of AI risk and ethical issues, and how those attitudes are affecting technology governance.

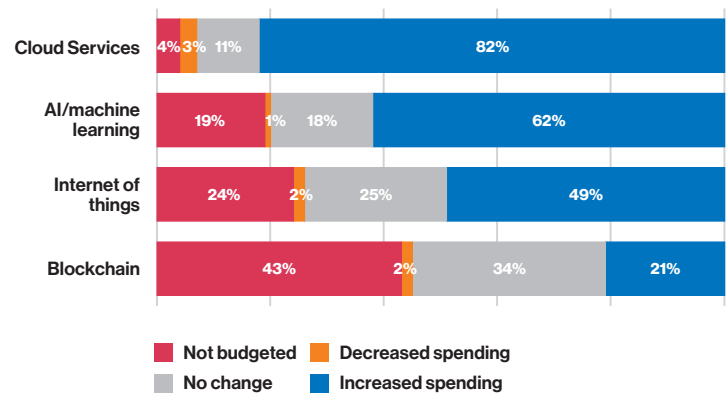
While AI promises to transform business and create value, for most organizations we surveyed, it is still too early to realize those benefits at scale. Just 5% are implementing AI widely across the organization, while 18% have implemented it in a few processes, and 19% are running pilot projects (see Figure 2, “Most Are in the Early Stages of the AI Journey”). Although another 13% are planning AI adoption, the largest group, 27%, are still investigating it.

The CEO’s Role in Driving AI

There’s an opportunity to learn from the organizations now implementing AI, and this report will look at how they differ from the rest. One distinction we noted: A commitment from the top appears to be key in driving AI forward. We found that those organizations broadly implementing AI are significantly more likely than others to have top management involved in identifying use cases. They are also more likely to identify the CEO and board as the primary champions for the introduction of new strategic technologies.

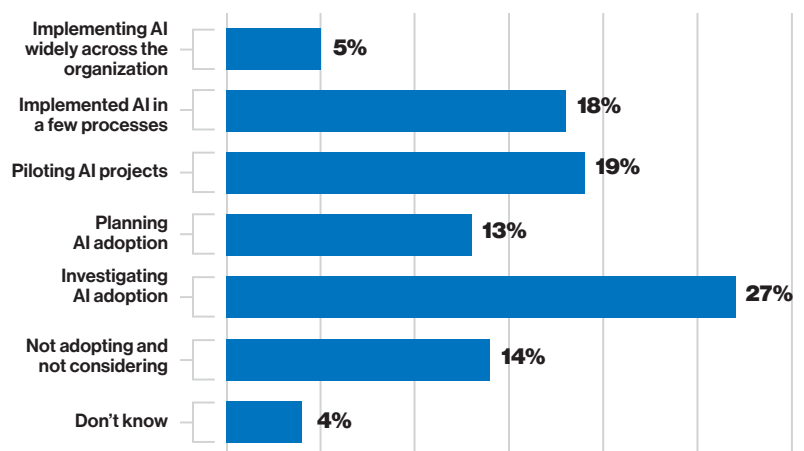
Leadership requires both taking action and setting an example. At the Toronto headquarters of Sun Life, an insurance and asset management company, President and CEO Dean Connor has set the expectation that leaders in the business should be able to discuss architecture and technology, and he devoted half a day of an annual executive summit to a data analytics boot camp.

Figure 1: Spending on Emerging Technologies



Spending on cloud services has increased for the largest number of survey respondents, followed by spending on AI/machine learning.

Figure 2: Most Are in the Early Stages of the AI Journey



While 42% of respondents are actively engaging with AI in their organizations, only 5% of all respondents reported implementing it widely to date. Meanwhile, 40% are investigating or planning adoption.

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“It sent the message, ‘If the CEO is discussing topics like our API strategy, you should be thinking about them too,’” says Eric Monteiro, senior vice president and chief client experience officer at Sun Life.

Peter Guerra, North America chief data scientist at Accenture, cautions leaders not to see AI simply as the latest hot technology offering a quick payback. Instead, they should be thinking about the direction of their businesses and how AI can help solve problems. “It should be something that drives everything you do, meaning it underpins everything that you do,” Guerra says. “You don’t focus on ‘I’m going to go do AI.’ You focus on ‘I’m going to do supply chain better, and I’m going to leverage AI to do that.’”

AI also requires a long-term mindset that can be difficult to square with the pressures CEOs face, says Ray Wang, principal analyst, founder, and chairman at Constellation Research. “AI requires a long-term philosophy. You have to understand that you’re going to make this long-term investment with an exponential payoff toward the end. Leaders often don’t understand how to do that, so they keep making short-term decisions for earnings per share instead of thinking about the long-term health of the company,” he says. “Companies that are going to succeed in AI are the ones that have a long-term view, that understand that this is a significant competitive edge and this is a long-term investment. Everything else is just lipstick on a pig.”

Supporting Grassroots AI Initiatives

Succeeding with AI is not only about decisions at the top. Guerra says that the best-case scenario for adopting AI and delivering a positive long-term impact involves balancing leadership support and grassroots enthusiasm.

“The best examples I’ve seen have been grassroots, bottom-up efforts combined with a supportive, top-down drive,” Guerra says. “Where I haven’t seen AI be successful is when it’s been only top-down driven ... or when it’s only grassroots, bottom-up. That leads to complete chaos, with nobody setting priorities.”

The kind of effort that combines top-down and grassroots approaches is working at American Fidelity Assurance Company, says Shane Jason Mock, vice president for research and development at the financial services and insurance firm. One of its successful projects used machine learning and robotic process automation to interpret and route customer emails for faster, more effective service.

The company’s R&D and innovation teams meet regularly with its executive team to discuss business needs that AI and machine learning can address. It’s a two-way channel. Sometimes the executive team will

AI Creates New Opportunities for the Midmarket

We compared survey responses from organizations whose annual revenues range from \$50 million to \$499 million with those from larger enterprises and found that midmarket companies are less likely to be piloting or implementing AI, less likely to have increased their spending on AI and cloud, and less likely to rate their foundational technology capabilities as mature. What are the implications of these findings for midmarket organizations? One possibility is that midmarket players that have the commitment to innovate with AI have the opportunity to gain a competitive advantage over their peers. By moving sooner, they can stay ahead of the AI maturity curve.

What's Working: Top Leadership Sets the Tone at Sun Life

At Sun Life, President and CEO Dean Connor sets the expectation that executives in the business must understand information architecture and technology in order to engage as collaborators in the development of AI applications. He has even devoted a segment of an executive summit to a data analytics boot camp.

discuss problems, and Mock's group will suggest solutions; at other times, the R&D team will bring an idea for a new AI or machine learning use case to the attention of executives, Mock explains.

Creating an environment where the power of AI can be tapped throughout the organization is a cultural shift the U.S. Air Force is pursuing as it aims to democratize access to AI technologies, according to Capt. Michael J. Kanaan, cochair for AI at U.S. Air Force headquarters. Applying AI across a global enterprise employing 450,000 people means looking for ways to use it across typical business functions — warehousing, supply chain, and human resources — as well as military-specific missions like aircraft operations, intelligence, surveillance, reconnaissance, and cyber operations.

“Empowering everyone to execute their organization’s missions with AI technologies,” as Kanaan describes the goal, demands a leadership commitment to creating new, cross-functional structures. The Air Force has done this by bringing together people from 26 support and mission operations. “We have in one room people who represent all of these things so that they have a say in the matter and can represent what they know best,” Kanaan says.

AI Demands Leadership Focus on Data

Leveraging AI for business advantage requires top leadership’s commitment to managing data as a key asset, according to industry experts and AI practitioners we interviewed.

“Being able to treat data as an enterprise asset means that there is somebody whose primary job is to understand where the data is and how it can be used to further the enterprise mission or goals,” says Melvin Greer, chief data scientist for the Americas at Intel.

The experience of working with AI and machine learning had led to a profound change in the way Sun Life works with data, says Monteiro.

“It’s raised awareness of the importance of data in all our applications,” he says. When a business unit team works to develop a new application, its members now think about the fact that other teams at Sun Life may be using the same data in the future. They know that the data has to be validated and its definitions must be clear. “They’re worried now about the quality of data creation, even in the process of designing applications or changing applications, which just wasn’t true in the past,” Monteiro adds.

Treating data as an asset, and devoting resources to managing it, can represent a challenging shift in thinking for corporate leaders, says Astrid Undheim, vice president of analytics and AI at Telenor Group, an Oslo-based telecommunications company serving the Nordic countries and Asia. “If we think about the big barrier to really succeeding with AI, the big job that needs to be done that executives may not truly understand is the need for good quality and high volumes of data. AI and prediction models often need completely different sets of data than what we have had before,” Undheim says.

“And that’s a huge task,” she adds. “It’s not about the data that we have in our systems and how can we use AI to create value from that. The thinking is really, how can we change our processes? How can we change the way we work, and how can we collect data that we

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need to build models for solving our most important business problems? It’s not like you just hire experts, AI people, and they will do magic. Most often, you have to go all the way back to what data are you collecting before these AI experts can actually do their job.”

Seacoast Bank recognized the importance of working on its data early in the machine learning journey, but first it identified its business objective: to gain intelligence that would help it to better serve customers.

“It was important to lead with asking, ‘What is the objective, strategically, of our company? What questions do we want solved?’ If you say, ‘Let’s just start gathering data,’ you might not be going down the best path. But if you start with, ‘What’s our objective?’ then you can start getting the appropriate data to do it. In our case, only then did we develop the machine learning and everything on top of it,” says Rob Stillwell, senior vice president and business analytics officer at Seacoast.

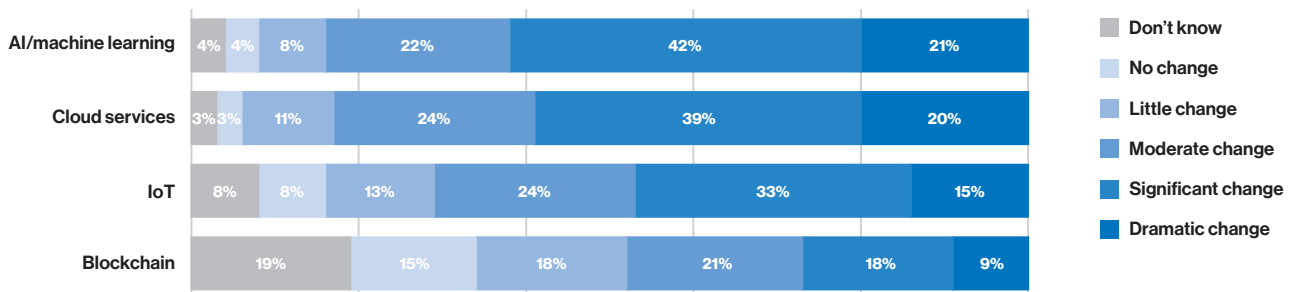
With its objective set, the 93-year-old financial institution serving southern Florida worked to reinvent the way it collected and analyzed data about its customers so it could serve them better. For example, instead of focusing separately on each of the various transactions the bank conducted, Seacoast created what Stillwell calls a holistic data set on the bank’s customers. The bank now uses machine learning models on this data to analyze the lifetime value of a customer relationship and target services at increasing that value.

“We worked on data for about two years before utilizing machine learning, because we knew how important it was to get the data part right,” Stillwell says, adding that the second element was determining how any data analytics or machine learning effort would match the bank’s strategy.

How AI Drives Organizational Change

This expectation that AI requires a commitment to organizational change is supported by our survey respondents, who see AI as driving more change than other emerging technologies. Sixty-three percent of respondents overall said they expect AI to drive dramatic or significant organizational change (see Figure 3, “AI Is Expected to Drive Organizational Change”). Among respondents

Figure 3: AI Is Expected to Drive Organizational Change



Sixty-three percent of respondents expect AI/machine learning to drive dramatic or significant change, slightly ahead of cloud and well ahead of IoT or blockchain. Note: Some percentages do not total 100 due to rounding.

who are widely implementing AI, 80% expect it to drive significant or dramatic change. Cloud, however, followed closely, with 59% seeing it as a significant or dramatic driver of change; it also emerged as a key enabling technology for AI implementation.

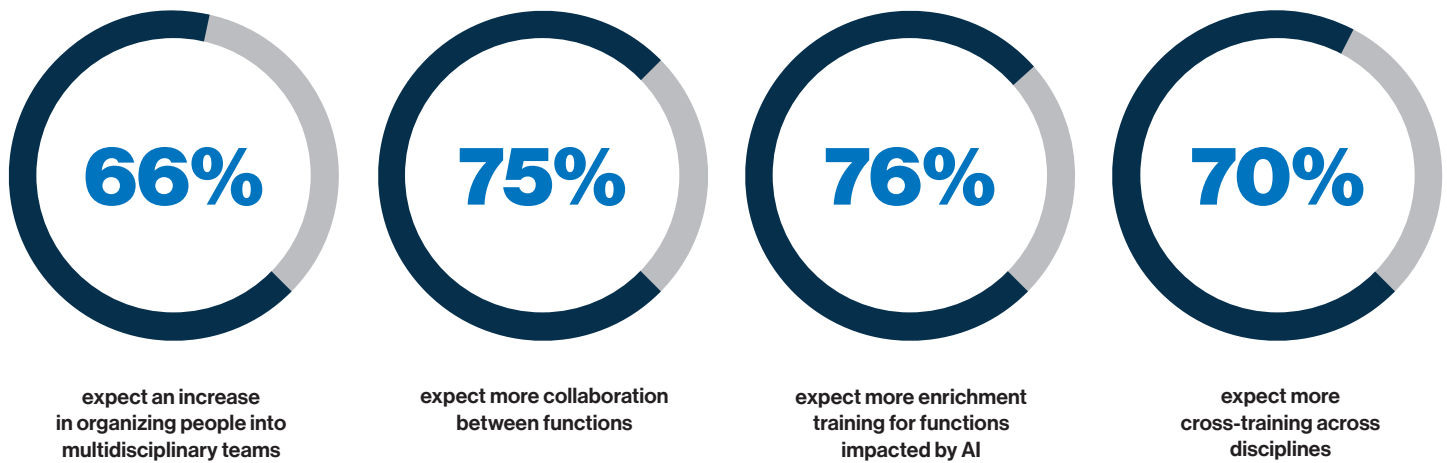
Large majorities of respondents see AI increasing activities that cross organizational boundaries: They expect it will increase the need for cross-functional collaboration, require more training across disciplines, and increase the number of multidisciplinary teams (see Figure 4, “AI Demands a More Connected Organization”).

This drive for cross-functional teamwork is reflected in how survey respondents report that data science expertise is situated within their organizations. Data science teams are placed to enhance collaboration, working across both IT and the business units at 22% of organizations, or being embedded in the business units at 21%. Data science groups are less often centralized or placed within IT.

Meanwhile, business or operational experts are identifying AI use cases at 47% of respondent organizations overall (see Figure 5, “Who’s Making the (Use) Case for AI?”); the likelihood that business experts are collaborating with data scientists in this way increases at organizations implementing AI.

While practitioners interviewed all support the need for collaboration between data scientists and business units, there are different philosophies and approaches to how they are organizing for AI and enabling collaboration.

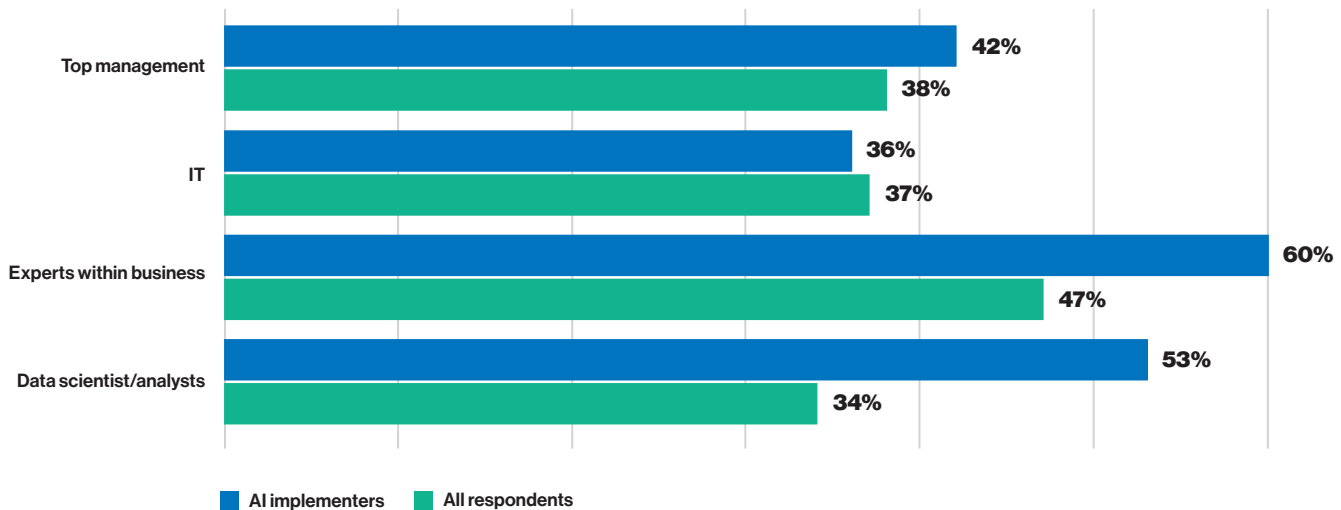
Figure 4: AI Demands a More Connected Organization



The majority of survey respondents expect that AI will require them to increase activities that bridge functions and disciplines across the organization.

What’s Working: Seacoast Bank Put Its Data House in Order Early

Seacoast Bank knew that to accomplish its machine learning goal of improving service to customers, it would first need to collect the right data and get it into good shape. Before it began to build models to help it better understand and increase the lifetime value of the customer relationship, it worked on its data strategy for about two years.

Figure 5: Who's Making the (Use) Case for AI?

Business domain or operational experts are most likely to be involved in developing use cases for AI and are much more likely to be involved at organizations already implementing AI.

Sun Life, for example, has organized data science and AI expertise in what Monteiro calls “a federated model,” in which these experts are managed centrally but embedded within various business units. (Sun Life also has a small number of data scientists available for consulting throughout the organization.) This helps the company ensure that its business strategy drives the development of use cases, such as matching clients to advisers who have experience dealing with a client’s particular stage of life, predicting the next best action for a client’s health or financial future, evaluating insurance policy risks, and predicting and preventing fraud.

“They are part of the management team’s discussions every day,” Monteiro says of the data and AI experts. Because they work in the business unit, they understand the relative importance and challenges of various use cases, and they know what the quality of the data is, he adds. “They know what the business outcome is. They understand the process that decision model is going to have to fit into way better than if they were off working in a centralized team.”

Others see an advantage in centralizing their AI and data science capability. Telenor has been working with deep learning and neural networks for four years, following on earlier experience with machine learning. Its applications have tackled improving customer service (by automatically helping customers with queries), human resources management (by sensing which employees are at risk of leaving), network management optimization, and an internet of things project that uses sensors to predict air quality in cities.

Telenor’s Undheim says that some of the business units of the multinational telco have centralized data science and AI expertise.

“There are many reasons for centralizing it. One reason is to create strong communities of experts. Another very good reason is to align on tools and platforms and really make sure that the company uses the same tools, because it’s quite demanding to set up the required platforms and tools,” Undheim says.

While organizations will make different choices about where to place data science expertise, many of the practitioners interviewed recognize, like Telenor, that there is a need for an enterprisewide approach to the data and technology infrastructure to support AI. Next, we’ll explore these and other implications that AI has for the CIO’s role and agenda. ●

**Download the full research report,
“How AI Changes the Rules,” at www.sas.com/MITreport.**