Harvard Business Review
ANALYTIC SERVICES

Pulse Survey

THE RISE OF INTELLIGENT AUTOMATION

Turning Complexity into Profit

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The Automation Imperative: Artificial Intelligence—Driven by Data

In nearly every industry and market sector, automation will be critical not only to compete but also to survive in the years ahead. Eighty percent of respondents to a recent Harvard Business Review Analytic Services survey said that adding intelligence and automation to their business processes is very important to their success. Forward-looking organizations are embedding artificial intelligence (AI) and machine learning (ML) technologies into their hardware infrastructure, software platforms, and fundamental business processes. They are automating routine activities and learning from the large data sets that enterprises increasingly depend on.

Many of the business leaders that HBR surveyed anticipate massive growth in their use of AI and autonomous technologies in the next three years. Oracle believes autonomous and cloud technologies are necessary precursors to being able to fully leverage AI—especially for machine learning and deep learning systems that need lots of training data. It's very difficult to automate the enterprise without a digital backbone and data-driven culture. The survey respondents agree—more than two-thirds of them said that the most critical organizational attribute for success in the AI economy is having a culture that supports data-based decision making.

The five business areas that respondents expect will benefit most from this type of automation are operations (77%), customer service (63%), decision support (62%), IT (61%), and finance (53%). For example, in the IT department, system administrators depend on AI to reduce service desk tickets and enable straight-through workflows. Cloud-based AI systems also assist with managing explosive data growth, as self-managing databases such as Oracle Autonomous Database use AI and machine learning to eliminate error-prone manual tasks that have traditionally been performed by database administrators. This unique database automatically applies security patches and updates, performs regular backups, tunes the database for optimal performance, and handles many other routine management tasks.

Oracle is at the forefront of today's digital transformation initiatives with a comprehensive AI strategy that impacts its cloud infrastructure (IaaS), cloud platform (PaaS), and cloud applications (SaaS). Only Oracle offers a complete portfolio of enterprise cloud services, driven by machine learning and AI. For example, Oracle Cloud Infrastructure is optimized to run AI/ML workloads. Oracle Analytics Cloud uses AI to deliver intelligent insights to business users. And the Oracle Data Science service streamlines collaboration among data scientists.

CIOs love the rigorous security and exceptional cost savings associated with Oracle's self-managing information systems. Two-thirds of the respondents to the HBR survey are currently in production with cloud, and many of them are either using or considering Oracle's next-generation cloud infrastructure—which represents a fundamental re-architecture of the conventional public cloud. "The low-hanging fruit for intelligent automation is data-intensive and repetitive tasks that machines can do better and faster than humans," Harvard Business Review Analytic Services reported.

Read on to learn how Oracle's commitment to automation will help vault your enterprise to the forefront of its industry.

Learn more about Oracle's cloud and autonomous technologies: www.oracle.com/cloud

THE RISE OF INTELLIGENT AUTOMATION

Turning Complexity into Profit

EXECUTIVE SUMMARY

Automation that is enhanced through artificial intelligence (AI) is critical to organizations' ability to compete and survive in the years ahead, according to nearly 400 business leaders recently surveyed by Harvard Business Review Analytic Services. Respondents say that to be successful, their organizations must incorporate more AI and automation into their business processes. However, few have done so to any significant extent. It's a perilous situation, since respondents say that the consequences of not investing would be devastating to the long-term health of their business.

Given this prospect, it's not surprising that respondents expect to significantly increase their use of intelligent automation over the next three years. Businesses in all industries as well as technology suppliers will incorporate more intelligence into a variety of their systems and processes. To get full advantage from these investments will require rethinking what it means to operate as an intelligent enterprise, moving from pockets of automation to a strategic, enterprisewide approach to it.

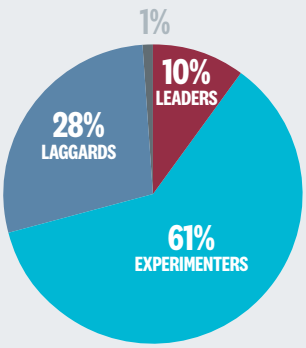
Organizations that make this commitment must first understand what their business goals are for more intelligent automation. Only then will they be able to lay the technology groundwork and begin to create a culture that supports working in sometimes significantly new ways. And none of this can happen without high-quality data—and the experience and skills to get value from it.

Eighty percent of the 389 survey respondents say building more intelligence and automation into their business processes is very important to the success of their enterprise, rating such a move an 8, 9, or 10 on a 10-point scale of importance. But only 10% describe their enterprise's use of AI and automation today as sophisticated and extensive—these are the leaders. Some 61% say there are pockets of AI/automation in the company now—the experimenters—while 28% say there is little or no use of AI/automation—the laggards. FIGURE 1

But respondents anticipate massive growth in their use of AI/automation over the next three years, with well over half (59%) saying their use will be sophisticated and extensive, about a third (35%) saying there will be pockets of implementation, and only 3% saying they won't be using AI/automation at all. Even accepting there might be a certain degree of undue optimism in those answers, it's safe to say there will be substantial growth in the use of intelligent automation in the near future.

FIGURE 1

CURRENT USE OF INTELLIGENT AUTOMATION



LEADERS
Sophisticated use, multiple applications

EXPERIMENTERS
Pockets of AI/automation

LAGGARDS
Little or no AI/automation

DON'T KNOW

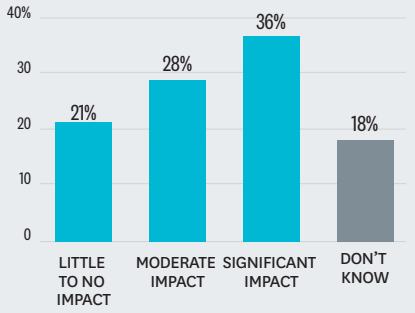
SOURCE: HBR ANALYTIC SERVICES SURVEY, NOVEMBER 2018

FIGURE 2

IMPACT OF AI ON LEADERS' BOTTOM LINE

How much impact has AI had on your organization's bottom line?

[SCALE OF 1 TO 5 WHERE 1 = NO IMPACT AND 5 = SIGNIFICANT IMPACT]



SOURCE: HBR ANALYTIC SERVICES SURVEY, NOVEMBER 2018

There's a lot at stake. Respondents see investments in AI and machine learning (ML) as a competitive necessity and believe that the impact of not investing would be a loss of customers and market share, falling behind the competition, and eventually, business failure. These issues were cited by the vast majority of the nearly 300 people who responded to an open-ended write-in question asking what the consequences would be in their business. Comments included:

- "[The consequences would be] a lack of competitiveness against our peers; higher operating costs than industry averages; and less speed to market when it comes to onboarding new customers."
- "We would fall behind competitors on customer delivery AND higher cost, so reduced profitability."
- "We'd become less operationally effective and unable to enter new markets. We'd lose market share due to an inability to compete on price and quality."
- "We would fall substantially behind our peers and likely the few companies that dominate our space would be able to expand their capacity and market share for incremental costs, thereby driving us out of business in the next 10-15 years."
- "Eventually going out of business. We simply won't be able to compete."
- "Our organization will die."

Leaders significantly outperform laggards when it comes to business growth. Nearly three-quarters of leader organizations (71%) have experienced revenue growth of over 10% in the past two years; only a third of laggards (33%) can say the same. The difference is even more striking for higher revenue growth, with leaders three times as likely as laggards to have seen growth of over 30% (23% of leaders versus 7% of laggards).

While these differences cannot be directly attributed to the use of intelligent automation, over a third of leaders (36%) say that their use of automation has had a very positive impact on the organization's bottom line, rating it a 4 or a 5 on a 5-point scale, where 1 equals no impact and 5 equals significant impact. FIGURE 2 Only 3% say it has had no impact.

Improving Efficiency and Quality in Business Processes

This impact on the bottom line comes from a combination of factors, chief among them being to increase process efficiency and quality. Eighty-three percent of respondents say they expect to boost efficiency by eliminating manual processes, and 74% say that increasing process quality was an objective. Improving the customer experience by accelerating the speed and quality of interactions came third at 66%.

While efficiency and quality don't always go hand in hand, intelligent automation "allows you to do optimization in a way that improves both of those at the same time," says Michael Chui, partner at the McKinsey Global Institute (MGI) and coauthor of the research paper, "AI Adoption Advances, but Foundational Barriers Remain." Chui likens this effect to that achieved with the use of lean principles in manufacturing, in which efficiency and quality improve at the same time.

"If you pull the AI lever, you can reduce various types of waste," Chui says. "That doesn't necessarily mean you reduce quality. In fact, you can increase quality by reducing unwanted variance, understanding exactly what it is that drives quality and being able to focus on controlling that variable. There are all kinds of things that make sense." For example, says Chui, in steel production, AI can help determine the optimal "recipe" to get the desired characteristics and "reduce waste throughout the entire process."

In customer service applications, increasing both quality and efficiency often means combining automation technology with "humans in the loop," says David Schatsky, a managing director at Deloitte and author of the research paper, "Intelligent Automation: A New Era of Innovation."

"A highly trained customer service specialist empowered by automated tools that can help them quickly find a range of relevant answers [will be] better and more efficient than one who doesn't have all that information at his or her fingertips."

To further illustrate the compounding effect of quality and efficiency through intelligent automation, Schatsky used an example from the audit part of his company's business. The standard of practice in the past was to review only a sample of the thousands of contracts a company might have to look for patterns that would indicate hidden risk. "Now we have technology that can automate the review," Schatsky says. "It can learn to recognize what all the clauses are and the key terms and conditions and effectively read every single one." The technology then maps how the contracts are the same and how they're different and which ones require greater scrutiny. "On the efficiency side, you have reduced the time it takes to read these things," he says. "On the quality side, you've actually expanded the scope of what you're doing so you can get a comprehensive view of the risk."

Using AI to Power IT Operations

That combination of efficiency and quality holds a lot of promise for running IT operations. Eighty percent of respondents say that AI-driven automation is critical to modernizing their digital environment, and 72% say that automated systems are more reliable than those that are run and managed by people. The same percentage (72%) say their cloud infrastructure must incorporate greater automation and intelligence.

"We're seeing more automation and AI activity in IT than in any other business area," says Phil Fersht, CEO and chief analyst at HFS Research, which has offices in the U.K., the U.S., and India. For example, chief information officers (CIOs) are incorporating AI on the service desk, "where it's all about reducing ticketing and having more straight-through workflows. There's a strong desire to do more with less for activities like infrastructure management and service desk, which are highly automatable. As more people move into a cloud environment, it's about not having to rely on more hardware and people to keep the lights on—it's about scaling the operations backbone with intelligent technology and automated digitized processes."

It makes sense that if CIOs want to play a strategic role in their organizations' intelligent automation efforts, they should get their own houses in order as quickly as possible. This will enable them to free up their team's time to focus on higher-level work. Besides, IT is likely the easiest place for them to start. "It's under their span of control, so they're able to oversee it end to end," says J.P. Gownder, vice president and principal analyst at Forrester Research, who focuses on the impact of automation technologies on the future of work, jobs, and the economy. "It doesn't have these deep customer impacts in the short run, so a lot of CIOs are going to start there."

However, it would be a mistake to focus on IT to the exclusion of other business processes. The three areas that respondents expect will benefit most from automation are operations (77%), customer service (63%), and decision support (62%). IT and finance came next, at 61% and 53%, respectively. Business leaders will pursue improvements in their own areas, with or without IT's help.

Augmented Intelligence for Better Decision Making

In addition to improving the efficiency and quality of processes, intelligent automation enhances decision making by automating the routine and learning from the large data sets enterprises increasingly have access

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"AUTOMATING FREQUENT, DATA-INTENSIVE, TACTICAL DECISIONS CAN SAVE A LOT OF MONEY."
TOM DAVENPORT, PROFESSOR AT BABSON COLLEGE

to. This was named a primary goal of intelligent automation efforts by 65% of respondents.

"Automating frequent, data-intensive, tactical decisions can save a lot of money," says Tom Davenport, professor of information technology and management at Babson College, the cofounder of the International Institute for Analytics, and author of *Competing on Analytics* and *Only Humans Need Apply: Winners and Losers in the Age of Smart Machines*. This is the area in which most use of AI in decision making is happening today. These decisions include things like "what offers to make to customers, what price to charge, should we automatically order this particular commodity? Those are the decisions for which you can gather a lot of data."

Some decisions can't be executed without automation, Davenport says. For example, "any kind of real-time, next best offer, next best action kinds of things like what ads appear on which customers' screens in digital marketing—that's got to be done in milliseconds. Humans can't think that fast and digest the information required."

AI extends and enhances the automation of the past, says Deloitte's Schatsky. "It's expanding the bounds of what can be automated. It's layering on the intelligence that allows automation to extend into domains that used to require some kind of human judgment or human perceptual ability."

Schatsky used the example of the way spam filters work. Initially, email providers wrote rules for how to distinguish between spam and non-spam emails, he explains—things like whether the subject line is in all caps or has exclamation points or the word Viagra. "But rules have their limitation when it comes to making decisions that require some judgment," like distinguishing between a valid and an invalid email, he says. "It's a bit of a judgment call, based on the ability to recognize complex patterns that sometimes can't even be articulated. That's where you need the intelligence piece—to be able to learn what these patterns are to be able to automate the process of judging, 'Is this spam or not.'"

As a result, he explains, providers "took thousands of emails that a human decided were spam and fed them into a machine learning system that was able to derive what patterns indicate something is spam or not. They're not writing rules; the system has learned and is applying the judgment" to make that call.

Human in the Loop

Many experts believe that pairing AI with a human is essential to the safe and successful adoption of intelligent automation as it moves beyond the repetitive, routine tasks most organizations have begun with. This addresses several concerns—quality and transparency among them. Especially when it comes to deep learning systems, "we need explainability," says Forrester's Gownder. "We need to figure out how we're going to audit the decisions that machines are making, or we need to keep a human in the loop and make that just one output." Medicine is a great example, he says, in which deep learning algorithms determine things like, "Okay, we think this is a tumor, but even though we're 80% sure, we're going to send this to a human doctor to finalize that kind of assessment and the diagnosis."

To collaborate with intelligent automation will require that employees and managers themselves change how they work. More than two-thirds of survey respondents (68%) say that the most critical organizational attribute to be successful in the AI economy is having a culture that supports data-based decision making. That's starting to happen, with business leaders shifting from a decision-making mode of developing insight based on experience, intuition, and "gut feel" (11% of all respondents) to hinging it on data and analytics. However, most (60%) still rely primarily on internal data sources and standard analytics. Only the leaders are making decisions based on multiple sources of internal and external data and sophisticated analytics. FIGURE 3

And leaders are significantly more confident in the quality of their organization's decision making, with 38% strongly agreeing, compared with only 20% of experimenters and 9% of laggards.

Even when intelligent automation doesn't require human intervention, some enterprises let employees override decisions in the beginning, until they gather enough data to prove results, says Davenport. For example, when one large entertainment company introduced automated pricing decisions for its hotel rooms, some of its employees thought they could do a better job. These decisions were based on a lot of data, namely hotel vacancy levels, popular dates, the loyalty level of the customer, and other metrics. While the CEO and CIO were confident the system would make better decisions than human agents, they let employees override the decisions initially. But results showed that the automated system made more profitable decisions than the overriders, Davenport says. With that evidence, the company not only had valid reason to decrease overrides; it helped employees come to their own conclusions about the quality of the automated decisions.

At the end of the day, all of this is about getting hard-dollar value from information. Most survey respondents (58%) believe their organization's ability to leverage data and insight

for business value is on par with their competitors. Around a fifth (19%) rate themselves better, and a somewhat smaller group (17%) say they are worse.

Leaders are well ahead of laggards in getting business value from data and insight, with 45% of leaders saying they are ahead of their competitors, compared with only 19% of experimenters and 8% of laggards. FIGURE 4

The Road to Intelligent Automation

Business leaders who believe that intelligent automation is an important part of their company's future need to approach it strategically, not just in pockets of discrete applications. That means having C-level involvement throughout.

"Where we see companies really interested in making investments is where intelligent automation has the potential to confer some kind of strategic benefit," says Schatsky. "Not only that they can lop a percentage point off their cost, but something that will enable them to compete better, provide higher quality, or respond to the market or serve new markets faster."

Many organizations have yet to figure out what that strategic benefit is and where intelligent automation fits in their own operations. Respondents say a lack of understanding about how to apply it to their specific organization's business is the number-one barrier, named by 44%. The next-highest hurdles were a lack of vision and/or communication from senior leadership and a dearth of digital business skills, such as being able to make use of analytics and data-driven decisions—both cited by 33% of respondents.

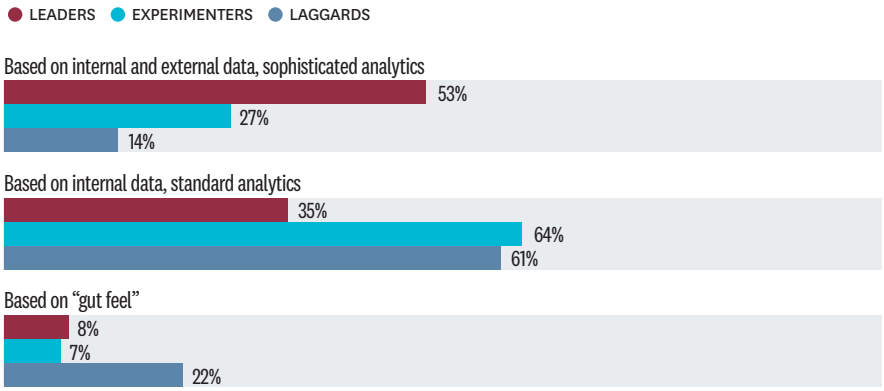
Given how quickly this is coming on—and the fact that half of respondents say that digital processes are becoming too complicated for humans to control and manage in real time—business leaders must educate themselves on the benefits and risks of intelligent automation and start with a couple of use cases that can make a real difference to the business. Only with experience will they understand the cost/benefit equation; leaders are almost three times as likely as laggards to say they have a very clear picture of costs and benefits, at 43% compared with 15%.

Interestingly, nearly two-thirds (65%) of respondents look to their CIO to develop the cost/benefit analysis for automating various business processes, but only 37% say their CIO has already developed a compelling

FIGURE 3

DECISION-MAKING APPROACH

How would you describe your organization's approach to developing insight for use in decision making?

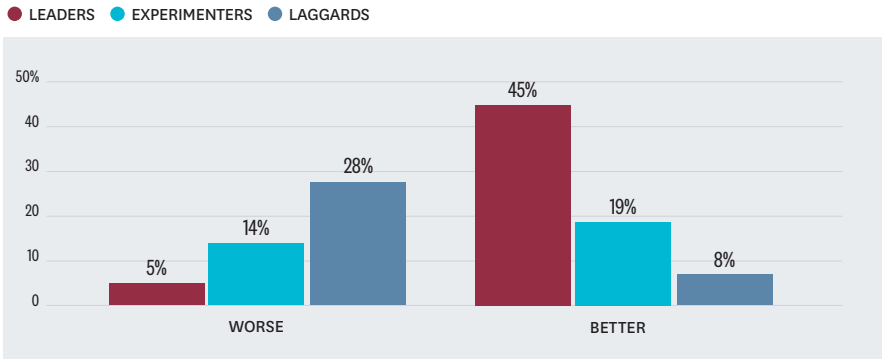


SOURCE: HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, NOVEMBER 2018

FIGURE 4

LEADERS GET MORE VALUE FROM DATA RELATIVE TO COMPETITORS

How would you rate your organization's ability to leverage data and insight for business value relative to your competitors?



SOURCE: HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, NOVEMBER 2018

EXPERTS SEE DIGITAL TRANSFORMATION AS THE NECESSARY PRECURSOR TO BEING ABLE TO FULLY LEVERAGE AI.

case for the use of AI/automation. There's an opportunity here for CIOs to help lead. However, no CIO should take this on as an IT exercise, except when it comes to automating IT itself. This needs to be a collaborative effort between the process owners and the technology and data experts who know what's possible.

McKinsey's Chui and other experts see digital transformation as the necessary precursor to being able to fully leverage AI. "In order to use these techniques, specifically machine learning and especially deep learning, you need lots of training data," Chui says. "If you're not already digitizing your organization, it's harder to collect that data. Secondly, even when you have a superior insight from an AI-trained model, you're not going to actually achieve benefits at scale unless you change the behavior of the organization at scale. It's very difficult to do that without a digital backbone or digital nervous system." That's why the shift to a data-driven approach and culture throughout the enterprise is so important.

While respondents look to the CIO for leadership in intelligent automation, they are less sure about their own IT department's ability to manage this work, with as many saying they don't believe their IT department has the necessary skills and ability to deploy and manage AI/automation (39%) as those who claim they do (40%). Leaders are well ahead here: 63% believe they have the necessary skills in IT, compared with 47% of experimenters and only 19% of laggards.

That may not matter overly much, as many of these technologies will find their way into enterprises without the company ever taking on a specific intelligent automation program. The reason for this is that vendors are incorporating intelligence into their own existing products. "AI is in the roadmap of everything," says Maureen Fleming, program vice president, intelligent process automation at global research firm IDC. "Every technology vendor is basically looking at how to incorporate AI to improve the level of automation they offer their customers." For example, vendors that offer robotic process automation (RPA) are incorporating natural language and video processing to enrich their offerings.

"RPA has been really hot, but it has been more brute-force automation," says Fleming. "As businesses have gained benefits from it, they've run into barriers where they've needed different techniques to assist RPA—that's where AI becomes really important."

Gownder agrees, calling RPA the on-ramp to intelligent automation for many organizations. "It's using natural language processing on the front end and machine learning on the back-end where it says, 'Okay, we're watching millions of transactions done by this RPA bot, how can we make the system better?'" he explains.

The Impact on People: Skills, Jobs, and Unintended Consequences

Introducing more intelligent automation into an organization will certainly have an impact on peoples' jobs and the skills they need to be successful. Many jobs have some percentage of repetitive work that is ripe for intelligent automation. When that part of workers' time is freed up, what will they do?

Many experts argue that employees will welcome being freed from the kind of work that is easily automated, as long as they can see a viable future for themselves doing other things. In a tight job market, especially, "automation is important to keep high-quality people," says Babson's Davenport.

For instance, says Chui, when IT becomes more automated, "if we create technologies that allow DBAs [database administrators] to spend 20% or 30% less of their time doing rote tasks, then they can spend more time architecting or planning or some of these higher-level tasks."

Davenport agrees, seeing DBAs in the future "developing the automation capability, refining it over time,

THE TECHNOLOGIES OF INTELLIGENT AUTOMATION

More than half of respondents name many intelligent automation technologies as being highly important to their businesses' futures, rating them an 8, 9, or 10 on a 10-point scale. FIGURE 5

While 80% of respondents said predictive analytics is very important to their organization's future—more than any other technology—only half that number have predictive analytics in production: 19% with established programs they are operating and refining and another 21% in the process of rolling them out. Forty-two percent are still in the experimentation stage.

Respondents are furthest along with cloud services. Two-thirds (66%) are currently in production with cloud, either operating/refining (44%) or rolling out (22%). It makes sense that cloud would lead, as it provides the environment to make use of many of the other intelligent and automation technologies.

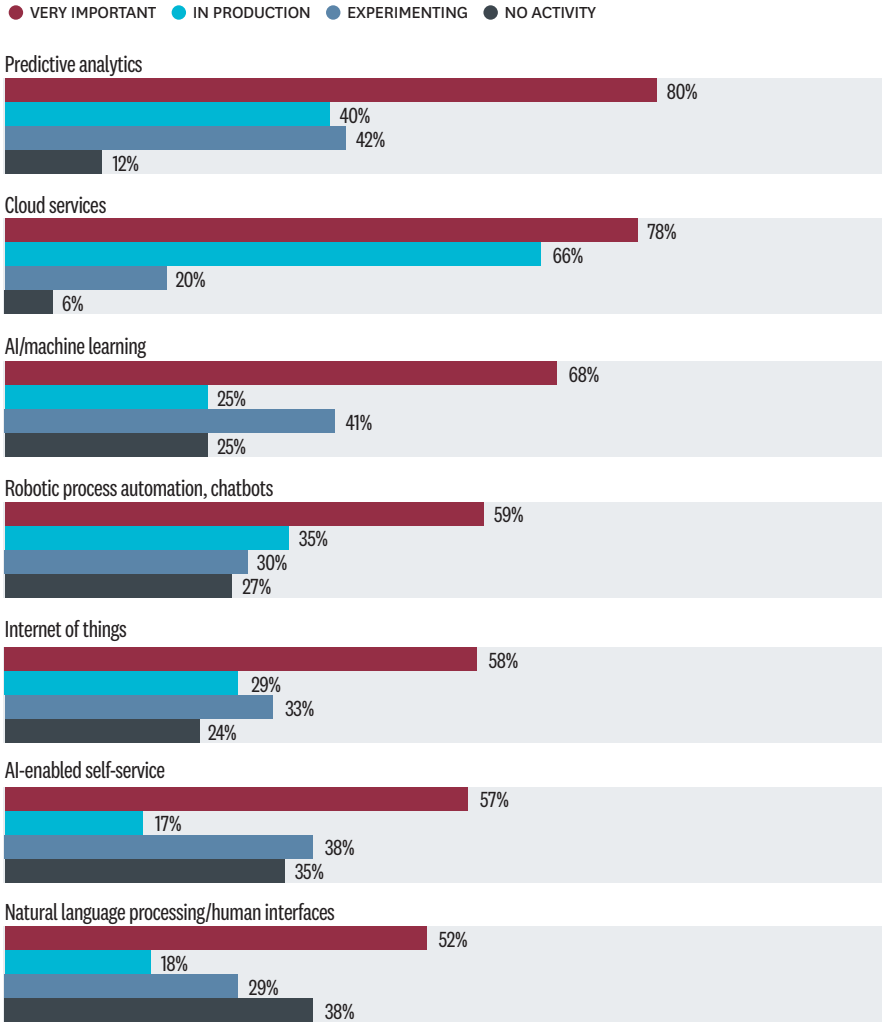
Artificial intelligence and machine learning were deemed the third-most important set of technologies, yet adoption is relatively low at 25% (13% in full production with another 12% just getting rolled out). The high rate of experimentation (41%) suggests that those numbers will grow in the years ahead.

Applied computer vision, augmented reality/virtual reality, and physical robots were rated less important by respondents overall, at 40%, 29%, and 23%, respectively, and are not shown on the chart. These lower figures may be because these technologies are more relevant for some industries than for others.

FIGURE 5

TECHNOLOGY IMPORTANCE AND DEPLOYMENT

How important are the following technologies to your company's future? What stage is your organization at with the following technologies?



SOURCE: HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, NOVEMBER 2018

MORE THAN HALF OF RESPONDENTS NAME MANY INTELLIGENT AUTOMATION TECHNOLOGIES AS BEING HIGHLY IMPORTANT TO THEIR BUSINESSES' FUTURES.

EXECUTIVES INTRODUCING INTELLIGENT AUTOMATION INTO THEIR BUSINESS PROCESSES AND DECISION MAKING ALSO MUST MANAGE THE CONSEQUENCES OF HOW ALGORITHMS ARE DEVELOPED AND HOW SMART SYSTEMS LEARN.

figuring out if it's having too many false positives, investigation work for what the automation is saying—more high-level monitoring of the data coming out of the systems."

To take on those other responsibilities, employees will need support to evolve their skills. This is true not just in IT but across the business, as everyone's job is touched by automation.

Leaders are twice as likely as laggards to give employees access to the tools, data, and training they need to operate in this new environment (73% versus 35%) and, specifically, to train decision makers to better use and analyze data (63% versus 31%). Leaders are nearly three times as likely to train frontline employees (63% versus 22%). To get value from their investments over the coming years, organizations must make such training a priority.

Executives introducing intelligent automation into their business processes and decision making also must manage the consequences of how algorithms are developed and how smart systems learn. A third of respondents (34%) are very concerned about the ethics of using more AI/automation, rating it an 8, 9, or 10 on a 10-point scale. A full 13% say they are extremely concerned, rating it a 10.

Despite this level of concern, only 17% of respondents say their company has set up a governance model for the appropriate use of AI/automation. (Leaders are well ahead of the average at 38%.) Fifty-six percent have not, and 27% don't know. This should just be an extension of companies' data governance, says Chui. "It would be odd to single out AI from analytics and data because they're quite well linked." However, those who are responsible for data governance must educate themselves on how AI works before going too far down the path of intelligent automation.

One way some companies are addressing the ethical concerns of AI, at least for now, is to avoid the use of probabilistic AI and deep learning when the decision process is not transparent. This is especially important in highly regulated industries, Davenport says.

Conclusion

While intelligent automation is more dream than reality for most organizations today, its arrival is imminent. Business leaders surveyed for this report overwhelmingly believe it is very important to their organization's competitiveness, and they anticipate significant growth in their use of intelligent automation over the next three years. The unique combination of efficiency and quality that it makes possible represents a real opportunity—or threat—depending on how quickly and well business leaders act.

That said, this change won't happen overnight. Many experts say that digital transformation of data, skills, processes, and culture is a necessary precursor to being able to launch and scale intelligent automation. Companies that have at least started on their digital journey can then develop a strategy for intelligent automation and pick an initial use case to explore. This should be something with business impact, but the initiative should also be narrowly focused enough to learn from without putting a lot at risk. "Part of successful adoption of solutions that incorporate AI is being able to trust the accuracy of the AI itself, which delivers a probability-based output," says IDC's Fleming, who advises CIOs and their business partners to manage risk by focusing on outcome-based metrics. Fleming recommends "picking vendors who embed these types of metrics into their solution. Understanding the prediction accuracy of AI models is foundational for gaining trust in the model, understanding the larger costs around its use, and for continuous improvement."

The low-hanging fruit for intelligent automation are data-intensive and repetitive tasks that machines can do better and faster than humans. Many applications will keep a "human in the loop"—at least until the system has proven its reliability. Even then, AI systems by their nature learn and therefore change, so they need to be audited on an ongoing basis to ensure they are still performing as intended.

Intelligent automation promises to improve efficiency, quality, customer experience, and more. It will have applications in all parts of the business, from IT to human resources, operations to finance. C-level leaders should make it a priority to understand what's possible and start planning for their future today.

METHODOLOGY AND PARTICIPANT PROFILE

A total of 389 respondents drawn from the HBR audience of readers (magazine/ enewsletter readers, customers, HBR.org users) completed the survey.

SIZE OF ORGANIZATION

22% 500 – 999 EMPLOYEES

40% 1,000 – 9,999 EMPLOYEES

38% 10,000 EMPLOYEES OR MORE

SENIORITY

19% C-LEVEL OR EXECUTIVE MANAGEMENT

22% VICE PRESIDENT OR DIRECTOR LEVEL

43% MANAGERS, SUPERVISORS, SENIOR MANAGERS, OR DEPARTMENT HEADS

KEY INDUSTRY SECTORS

15% FINANCIAL SERVICES

14% MANUFACTURING

15% TECHNOLOGY

13% BUSINESS/ PROFESSIONAL

13% CONSULTING SERVICES

6% GOVERNMENT/ NOT-FOR-PROFIT

5% HEALTH CARE

OTHER INDUSTRIES REPRESENTED LESS THAN 5% EACH

JOB FUNCTION

16% GENERAL/ EXECUTIVE MANAGEMENT

10% IT

9% CONSULTING

8% HR/TRAINING

8% OPERATIONS/ PRODUCTION/ MANUFACTURING

8% SALES/BUSINESS DEVELOPMENT/ CUSTOMER SERVICE

6% EACH FROM STRATEGIC PLANNING, FINANCE/RISK, AND R&D/INNOVATION/ PRODUCT DEVELOPMENT

OTHER FUNCTIONS REPRESENTED 5% OR LESS OF THE TOTAL

REGIONS

43% NORTH AMERICA

27% EUROPE

18% ASIA/PACIFIC

5% MIDDLE EAST/ AFRICA

5% LATIN AMERICA

2% OTHER

Figures may not add up to 100% due to rounding.

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