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ECONOMICS

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Accelerating automation with AI

In collaboration with:

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Introduction

The ongoing migration of data and applications to the cloud is unlocking access to advanced technologies such as arti- ficial intelligence. Now organizations can increasingly apply AI-enabled automation, or intelligent automation, to a wide range of business and IT processes, from call-center sup- port and document reviews to cybersecurity incident alerts and network performance monitoring.

The progression from simple to advanced automation will be critical to streamlining business and IT operations and to facilitating organization-wide innovation—necessities that have become even more important in response to the global pandemic. In fact, nearly half of IT executives in our survey say automating processes has taken on greater urgency as a result of COVID-19.

Oxford Economics and IBM surveyed 6,000 CIOs, CTOs, and senior IT executives from organizations around the world and across sectors about their cloud and AI digital transformation efforts—and how those technologies enable intelligent business and IT automation. Our analysis of the survey data and conversations with senior executives suggest that the adoption of AI will be instrumental to au- tomating decision-making, workflows, and processes—and achieving heightened return on investment.

Two groups of respondents are ahead in their adoption of cloud and AI—we call them **Cloud Strategists** and **Cloud and AI Unifiers**. These outperformers are more likely than others to report effective technology operations and invest in robotic process automation (RPA).

When it comes to combined cloud and AI projects, Cloud Strategists (companies with a higher-than-average share of applications in the cloud) are more likely to report positive technical ROI in areas such as process automa- tion and business operations. Meanwhile, Cloud and AI Unifiers (those furthest along in the journey to AI-enabled, cloud-based applications) are more likely to report posi- tive business ROI in areas such as business and financial operations.

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: Telecommunications, retail, manufacturing, financial services, and healthcare providers and payers

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

Accessing cloud and AI maturity

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

Qualification criteria for **Cloud Strategists**
n=1,589 respondents, 26.5% of respondents
- Must have had at least 20% of apps in the cloud two years ago
- Must have at least 40% of apps in the cloud today

Qualification criteria for **Cloud and AI Unifiers** (highest maturity) n=809 respondents, 13.5% of respondent
- Must have had at least 20% of applications in the cloud two years ago
- Must have at least 40% of applications in the cloud today
- Must use cloud in combination with AI
- 21% or more of new applications incorporate AI
- "Agree" or "Strongly agree" that a unified platform for cloud, data and AI is critical to their organization's success in the long term

Automation-driven transformation

Leading organization-wide innovation and digital transformation efforts is a top priority for IT executives as they navigate an era of rapid change and game-changing new technologies. Automation can play a key role in these initiatives; it is no surprise, then, that cloud and AI strategies are frequently focused on applications that support automation, from AI-enabled RPA to machine learning.

Automating decision-making, workflows, and processes are among the top motivators for IT executives looking to implement AI across their organization. For the Singapore-based manufacturing firm Flex Ltd., automating simple and routine tasks is critical for creating efficient workflows. "You can automate a lot of help-desk-type functionalities," says Gus Shahin, the firm's Chief Information Officer. "We have tons of automation, like requesting access to certain tools, or spinning up a server for testing. All of that is completely automated—there's no human intervention there."

But Flex is looking to move beyond just automating simple tasks, and is now prioritizing AI-powered automation for more complex workflows across the business. "We're digitizing our contracts to try and get better contracts for Flex and for our customers," says Mr. Shahin. With the help of its legal team, Flex can use algorithms to identify important terms common across documents—eventually creating a reliable workflow "that ensures contracts are not going to get signed if they don't have A, B, and C in there."
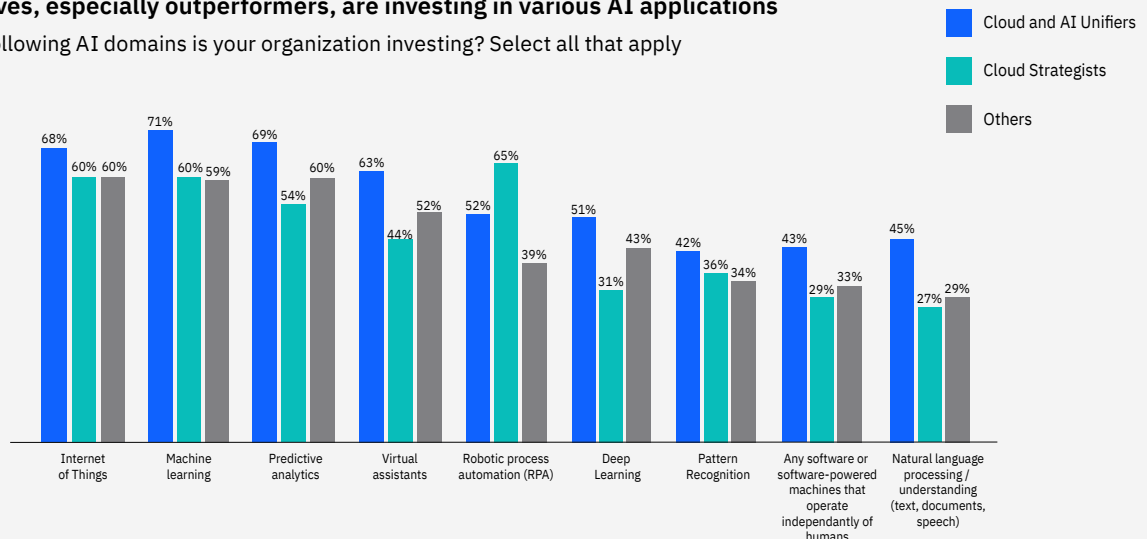
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Some IT executives in our survey already are investing in AI-powered applications that enable automation, such as virtual assistants, RPA, deep learning, and pattern recognition. Cloud and AI Unifiers, our most advanced group of outperformers, are more likely than others to focus on these areas—with the exception of RPA, which is tends to be a higher priority for Cloud Strategists.

One possible explanation for these differences: Cloud Strategists might still be in the early stages of investing in advanced technologies and transformation efforts (i.e., AI- powered automation), whereas some Cloud and AI Unifiers may be beginning to realize value from their investments in these areas.

Fig. 1: IT executives, especially outperformers, are investing in various AI applications

Q: In which of the following AI domains is your organization investing? Select all that apply

Legend: Cloud and AI Unifiers · Cloud Strategists · Others

AI domain	Cloud and AI Unifiers	Cloud Strategists	Others
Internet of Things	68%	60%	60%
Machine learning	71%	60%	59%
Predictive analytics	69%	54%	60%
Virtual assistants	63%	44%	52%
Robotic process automation (RPA)	52%	65%	39%
Deep Learning	51%	31%	43%
Pattern Recognition	42%	36%	34%
Any software or software-powered machines that operate independantly of humans	43%	29%	33%
Natural language processing / understanding (text, documents, speech)	45%	27%	29%

Deploying AI to accelerate automation

Intelligent automation does not happen overnight— companies must first evaluate existing processes, then optimize and digitize them before layering AI into the process.

Companies are making progress toward implementing AI and AI-enabled applications that should support automation. The vast majority of organizations in our survey have already deployed or plan to deploy AI across various aspects of their business—and at least half have already done so in areas such as business and IT operations (57% each) and process automation (56%).

An organization's cloud environment seems to be an important predictor of its AI deployment level: those with hybrid multicloud environments tend to be further ahead in their AI adoption. For example, Cloud and AI Unifiers—who are more likely than others to be in a hybrid multicloud environment—report higher rates of AI deployment in business operations (78% have already deployed AI, vs. 67% of Cloud Strategists and 47% of all others); IT operations (79%, vs. 49% and 56%); and process automation (74%, vs. 65% and 48%). One explanation for this relationship is that cloud and AI often benefit each other: those organizations that use hybrid environments may be better able to deploy AI, and deploying AI should allow organizations to successfully carry out AI-enabled transformation and advance their cloud strategies.

Fig. 2: Most organizations have already deployed AI, or plan to in the next two years

Q: In which of the following areas has your organization deployed AI? In which areas do you expect to deploy AI in the next two years? Select one for each area
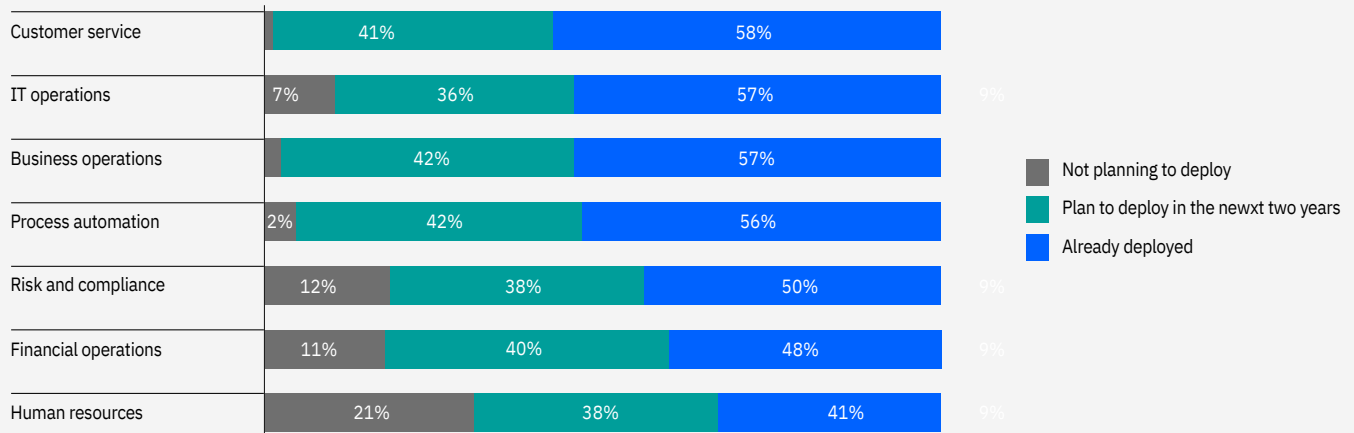

Customer service		41%	58%
IT operations	7%	36%	57%
Business operations		42%	57%
Process automation	2%	42%	56%
Risk and compliance	12%	38%	50%
Financial operations	11%	40%	48%
Human resources	21%	38%	41%

- Not planning to deploy
- Plan to deploy in the newxt two years
- Already deployed

Fig. 3: Cloud environment likely informs an organization's AI deployment

Q: In which of the following areas has your organization deployed AI? In which areas do you expect to deploy AI in the next two years? Select one for each area; by cloud environment
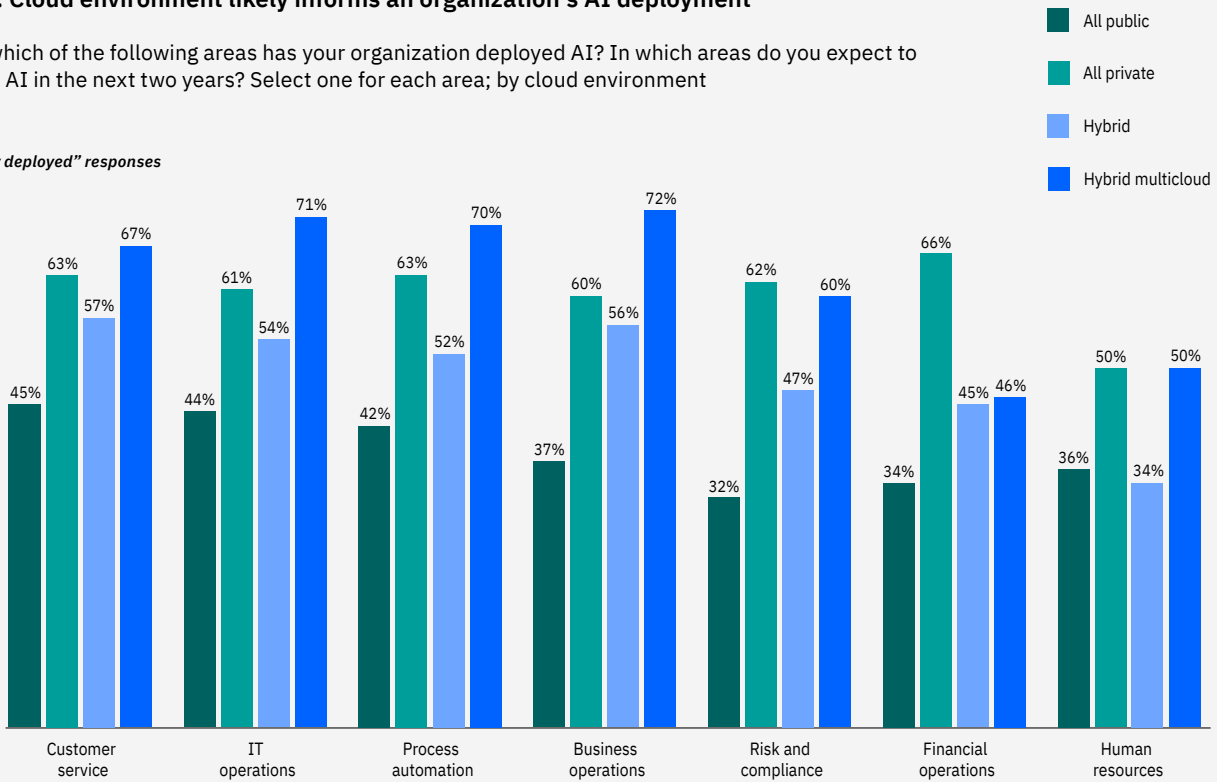
"Already deployed" responses

Legend:
- All public
- All private
- Hybrid
- Hybrid multicloud

Customer service: 45%, 63%, 57%, 67%
IT operations: 44%, 61%, 54%, 71%
Process automation: 42%, 63%, 52%, 70%
Business operations: 37%, 60%, 56%, 72%
Risk and compliance: 32%, 62%, 47%, 60%
Financial operations: 34%, 66%, 45%, 46%
Human resources: 36%, 50%, 34%, 50%

While a majority (75%) of our respondents agree that the effective use of AI will be critical to their organization's long-term success, those who are already prioritizing their AI investments—namely, Cloud and AI Unifiers—should be better positioned to advance their automation efforts rapidly, with an increased return on their investments. Most IT executives say their organization is effective at automating processes in terms of realizing business and technical value, but confidence varies based on company size and cloud and AI maturity. Companies with more than $5 billion in revenue are ahead of the curve when it comes to effectiveness in

realizing value from automated processes. (These larger organizations also are more likely to qualify for one of our outperformer groups.) While our survey data does not address this point, differencesin value realized could be due in part to the degree of complexity of workflows automated—simpler, easier- to-automate tasks may not yield the same performance improvements that later innovations might.

Overcoming challenges

IT executives face a number of barriers when it comes to AI adoption efforts—and while outperformers are not immune to these challenges, they do experience obstacles unique to their cloud and AI maturity levels that could influence their progress toward intelligent automation.

For example, Cloud and AI Unifiers face more sophisticated issues regarding AI and data, including data governance challenges; difficulty building and managing models with multiple AI providers; security and compliance issues; difficulty curating relevant data to leverage AI; and operational challenges leveraging data across multiple clouds.

Challenges for other respondents may reflect their early stages of cloud and/or AI adoption, as they are more likely than others to experience issues regarding lack of available data, immaturity of

technology on the market, budget issues, and lack of workforce skills.

Not all organizations have the internal capabilities—in terms of subject-matter expertise, technology infrastructure, or time—to implement these advanced technologies independently. At one large health system in the United States, the Chief Medical Information Officer explains that his organization must rely on a vendor capable of machine learning for their RPA applications. "We are all kind of thinking about moving toward machine learning, but it takes a unique set of skills to truly do it. We are far away from AI identifying a pattern to help us diagnose an outbreak of some variety," he explains. Ultimately, the CMIO sees advanced automation and other forms of AI as critical to success in the field, especially applications that can support physicians and reduce time spent on administration.

Fig. 4: Diverging barriers to AI adoption

Q: Which of the following barriers has your organization faced in your AI adoption efforts? Select all that apply

Legend:
- Cloud and AI Unifiers
- Cloud Strategists
- All others

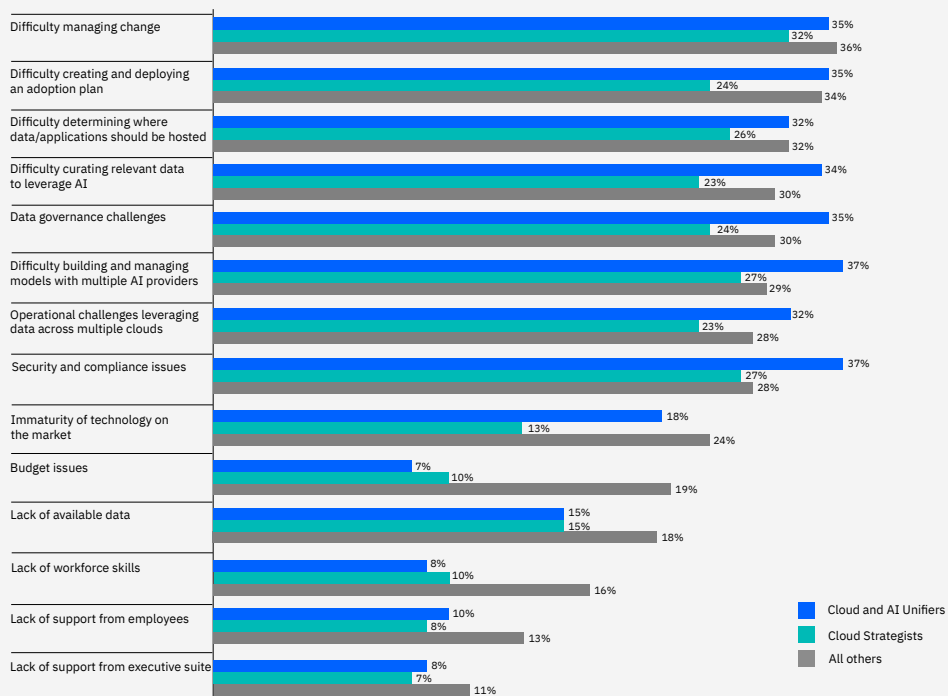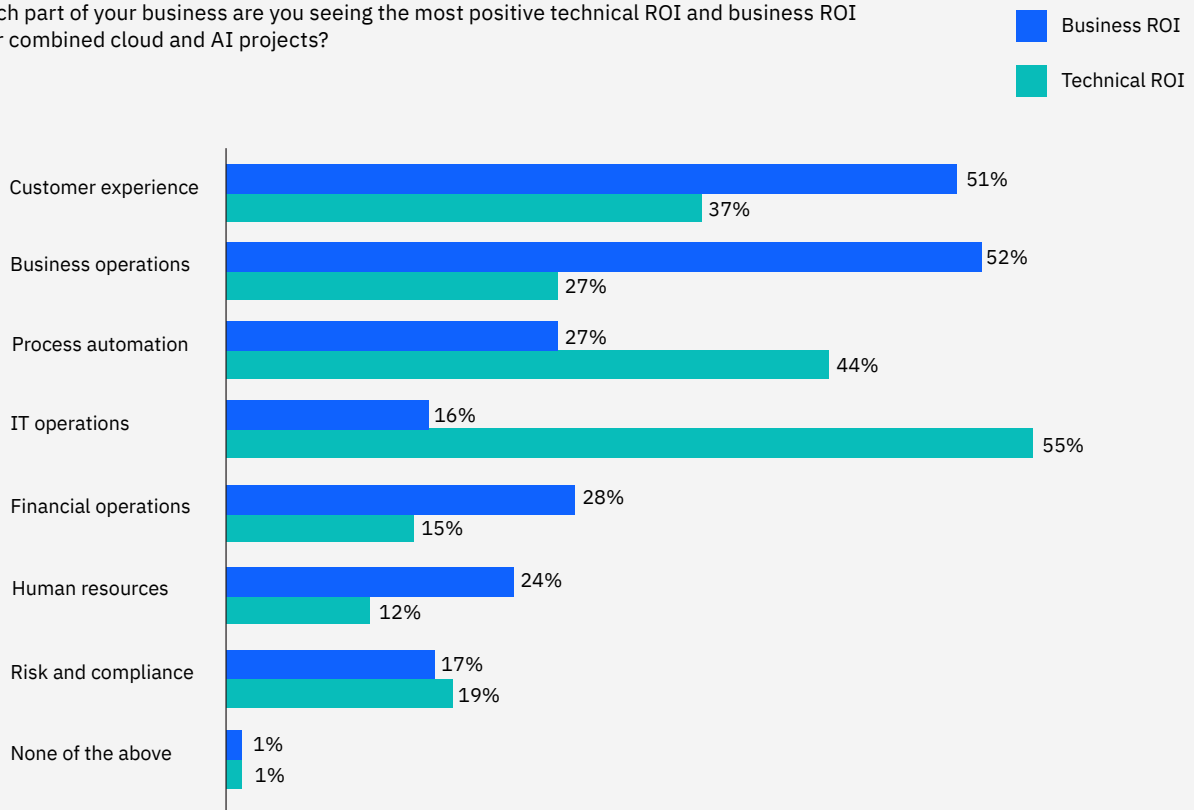| Barrier	Cloud and AI Unifiers	Cloud Strategists	All others
Difficulty managing change	35%	32%	36%
Difficulty creating and deploying an adoption plan	35%	24%	34%
Difficulty determining where data/applications should be hosted	32%	26%	32%
Difficulty curating relevant data to leverage AI	34%	23%	30%
Data governance challenges	35%	24%	30%
Difficulty building and managing models with multiple AI providers	37%	27%	29%
Operational challenges leveraging data across multiple clouds	32%	23%	28%
Security and compliance issues	37%	27%	28%
Immaturity of technology on the market	18%	13%	24%
Budget issues	7%	10%	19%
Lack of available data	15%	15%	18%
Lack of workforce skills	8%	10%	16%
Lack of support from employees	10%	8%	13%
Lack of support from executive suite	8%	7%	11%

Fig. 5: A unified cloud and AI strategy pays off

Q: In which part of your business are you seeing the most positive technical ROI and business ROI from your combined cloud and AI projects?

Legend:
- Business ROI
- Technical ROI

Category	Business ROI	Technical ROI
Customer experience	51%	37%
Business operations	52%	27%
Process automation	27%	44%
IT operations	16%	55%
Financial operations	28%	15%
Human resources	24%	12%
Risk and compliance	17%	19%
None of the above	1%	1%

Respondents across the survey sample are starting to see business and technical ROI from their combined cloud and AI efforts in a range of areas (see Fig. 5). Unsurprisingly, Cloud and AI Unifiers and Cloud Strategists are more likely to experience these rewards in some important areas: Cloud and AI Unifiers see combined cloud and AI projects delivering the most ROI in terms of business operations, financial operations, human resources, and risk and compliance.

Meanwhile, Cloud Strategists report higher rates of technical ROI in process automation and business operations. But even Cloud Strategists and Cloud and AI Unifiers are unlikely to report substantial ROI in some important areas, such as customer service for Cloud and AI Unifiers and financial operations for Cloud Strategists—suggesting that companies at all maturity levels have room to improve their technology infrastructure and processes.

Conclusion

Cloud and AI will continue to enable transformation for businesses around the world, especially as automation quickly becomes a top priority for organizations seeking efficiency, agility, and resilience. Our research suggests that organizations that prioritize AI adoption will be more likely to advance their automation efforts, realize substantial value from their investments, and overcome the barriers they face.

To learn more about how AI-powered automation and IBM can help you implement it across your entire business, please visit **www.ibm.com/cloud/automation.**

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**.