THE STATE OF ENTERPRISE AUTOMATION 2018

ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) Research
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PREPARED FOR:

ca
technologies

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THE EVOLUTION OF AUTOMATION

There is no denying that automation is top of mind for business executives looking to enable their organizations to move faster with less errors and lower costs. Recent advancements and near-term expectations for artificial intelligence and machine learning are like jet fuel to the interest and expectations for automation. Customer and trading partner expectations are driving organizations to reconsider how they do everything, with an eye to digitally transforming business processes. Automation is a key aspect of achieving digital transformation.
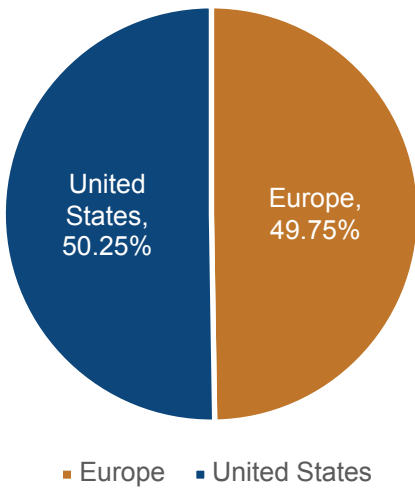
With all the interest and expectations for automation, it is easy to get caught up in the excitement. However, many realities can impede progress toward a completely automated utopia. Organizations can struggle with legacy systems, prior automation based on older technologies must be rationalized, and human factors including employee attitudes toward changing work practices and job security impact enthusiasm. Daily news stories about the fully automated world that will soon exist can be at odds with the frustrations of getting Siri or Google Assistant to do exactly what you meant to have happen. Most automation projects require interaction and cooperation with IT at a minimum, and significant IT and development resources for big infrastructure changes. IT itself is minimally automated and racing to implement DevOps and continuous delivery capabilities to become more agile and effective at broader automation projects.

Automation is a journey, not a destination. A big part of undertaking any journey is understanding where you are before planning where you want to go. CA Technologies and EMA undertook the research reviewed in this report to better understand the state of automation in 2018, and to establish benchmarks to measure automation progress over time. The scope of the study includes both business process and IT process automation.
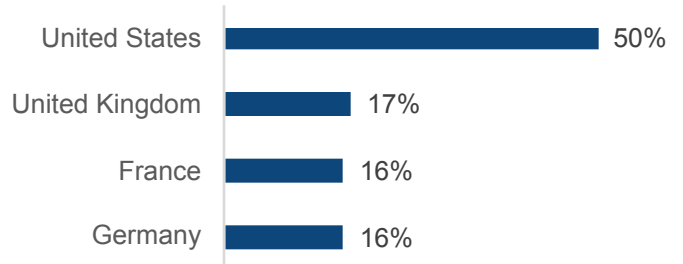
METHODOLOGY

To collect data on the state of automation, EMA conducted an email invite web-based survey during July 2018. Survey participants were sourced from companies with more than 500 employees, with 50% in North America and 50% in Europe. North America is represented by the U.S., while Europe is represented by UK, Germany, and France. EMA had 1,007 respondents complete the survey, with a 50/50 split between IT and business job titles. While senior executive voices were specifically sought out, respondents spanned all roles with 22% individual contributors, 50% managers or directors, and 28% executives. Respondents were not restricted by industry and represent a variety of commercial industries, government, and education. The most represented industries are finance and banking at 13%, manufacturing at 10%, high technology at 10%, consulting at 9%, hospitality at 7%, and retail at 7%.

Regions

United States, 50.25%

Europe, 49.75%

- Europe ■ United States

Countries

United States	50%
United Kingdom	17%
France	16%
Germany	16%

Job Function

Business Line Leader	24%
IT Operations	23%
Business Executive	19%
IT Development	10%
IT Security	9%
Business User	8%
IT Service Management...	5%
IT Executive	3%

Role

Manager or Director	50%
Individual Contributor	22%
Vice President	16%
CXO	12%

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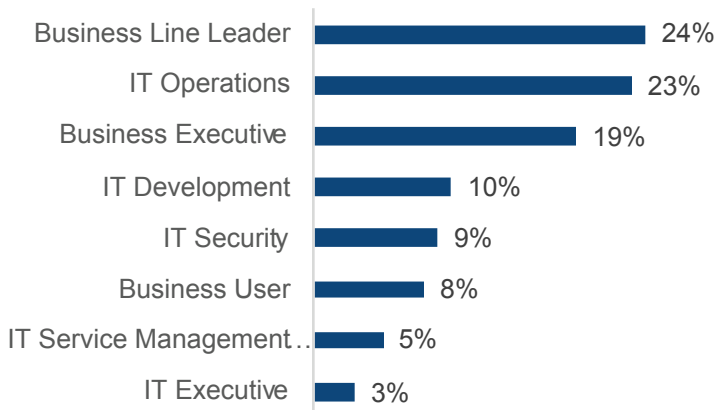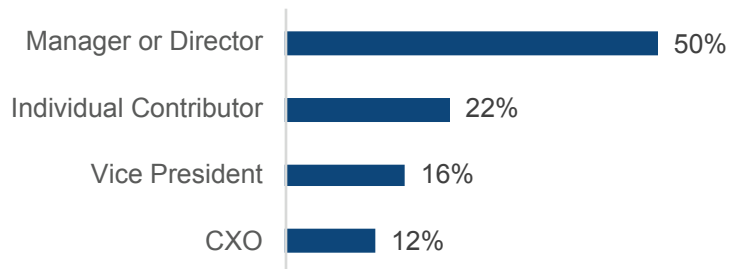
AUTOMATION MATURITY

The first step in understanding the state of automation is understanding how organizations view their automation maturity. Respondents were asked to rate their organization's overall automation maturity on a five-point scale. Forty-one percent described their use of automation as 4 - Very Mature or 5 - State of the Art, while 28% said 3 - Better Than Most, and 18% said 2 - Better Than Some. Just 4% said 1 - Not as Good as Most.
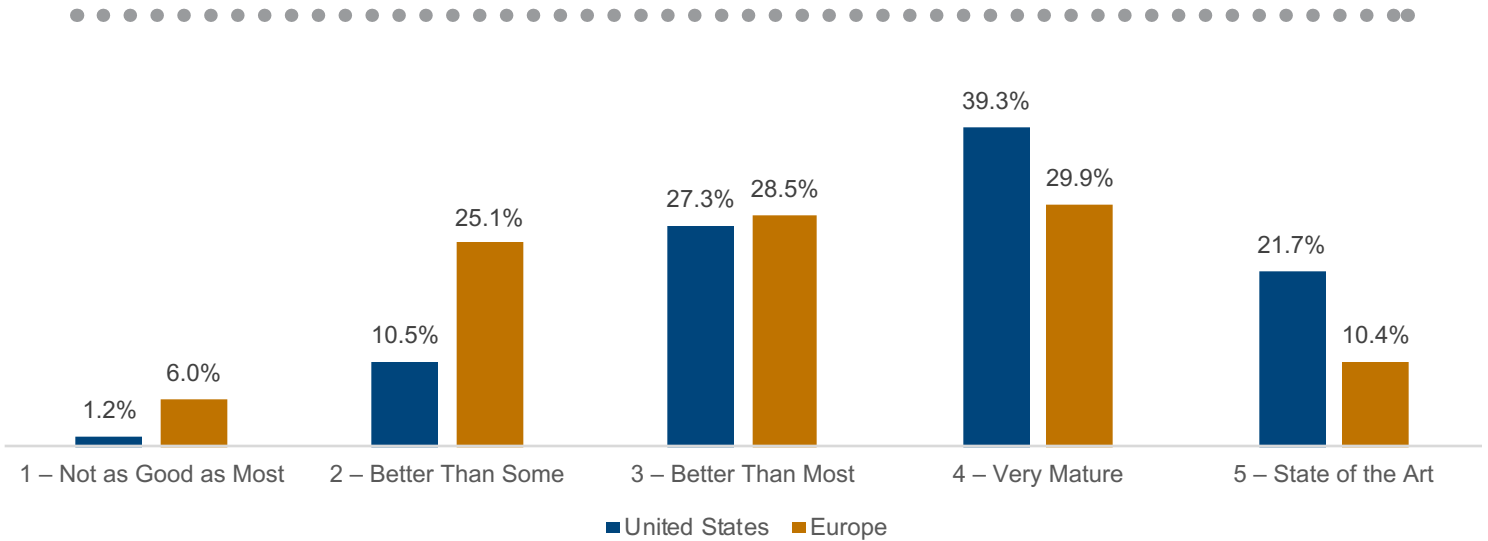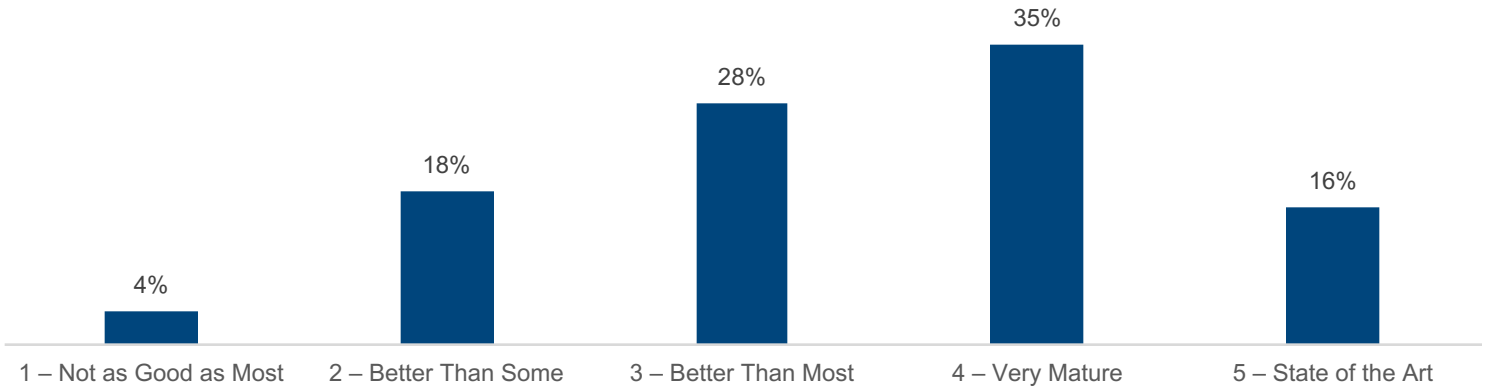
The overall mean for automation maturity is 3.42, with the U.S. averaging higher at 3.70 and Europe much lower at 3.14.

AUTOMATION MATURITY

Viewing automation maturity by company size confirms what many might expect—maturity increases as company size increases. The average maturity for small companies (under 2,500 employees) is 2.77, medium companies (2,500 to 9,999 employees) average 3.82, and large companies (greater than 10,000 employees) average 3.85. No small companies rated their automation maturity as state-of-the-art. CxOs were more critical of their organization's automation maturity, averaging 3.33, while all others averaged 3.43.

	1 - Not as Good as Most	2 - Better Than Some	3 - Better Than Most	4 - Very Mature	5 - State of the Art
Small (500-2,499)	6%	38%	29%	27%	0%
Mid-Sized (2,500-9,999)	1%	7%	28%	39%	26%
Large (10,000-20,000+)	4%	2%	26%	41%	27%

Small (500-2,499) · **Mid-Sized (2,500-9,999)** · **Large (10,000-20,000+)**

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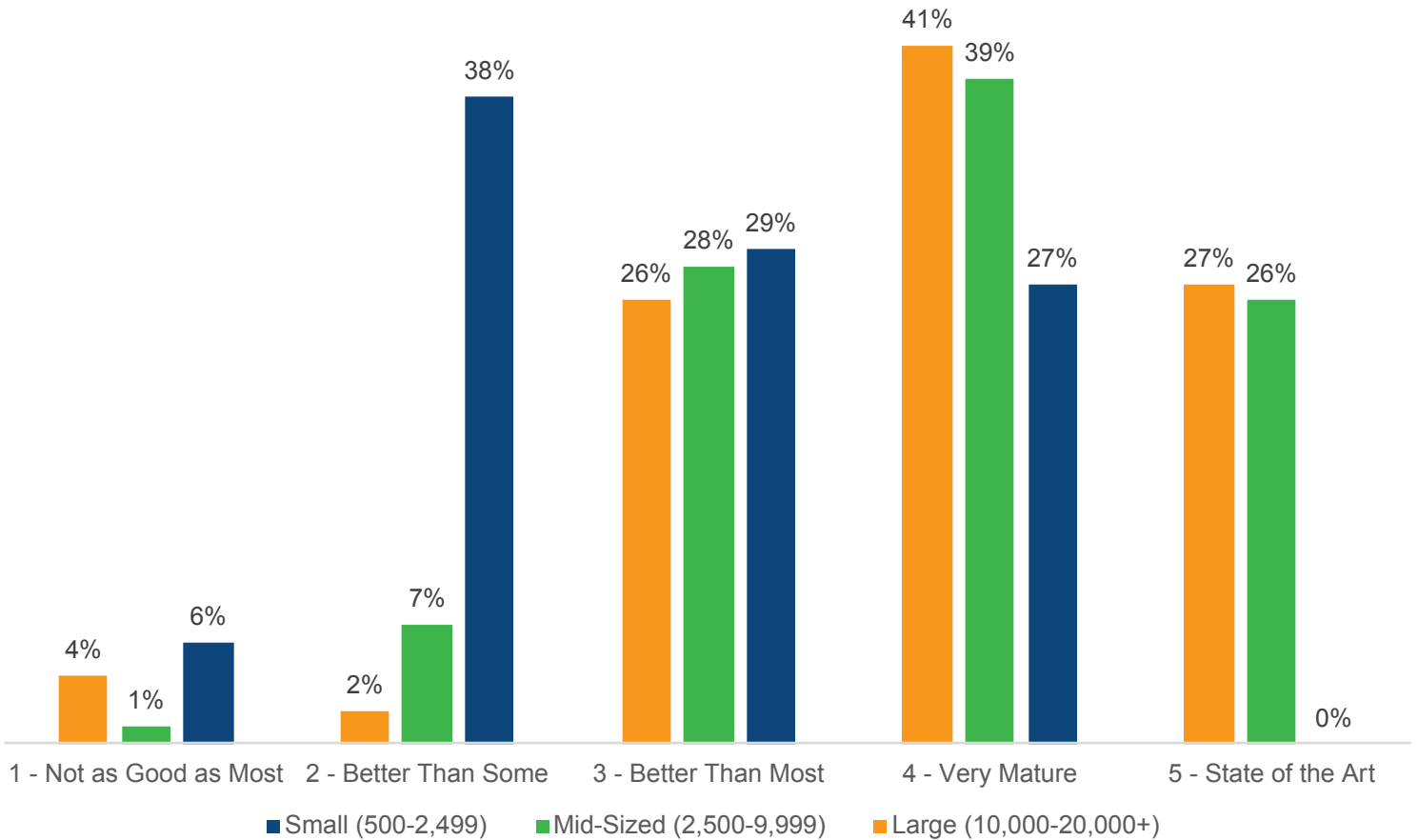
AUTOMATION MATURITY

To view automation maturity by industry, four industries will be highlighted. Retail is the most automated, with a mean of 3.90. None of the retail respondents selected 1 - Not as Good as Most, while 70% said 4 - Very Mature or 5 - State of the Art. Telco is the next-most automated, with a mean of 3.83. None of the Telco respondents selected 1 - Not as Good as Most, while 68% said 4 - Very Mature or 5 - State of the Art. Finance is nearly as automated as retail, with a mean of 3.80. Two percent of Finance respondents selected 1 - Not as Good as Most, while 65% said 4 - Very Mature or 5 - State of the Art. Manufacturing is the least automated of the four highlighted industries, with a mean of just 2.98. Eight percent of manufacturing re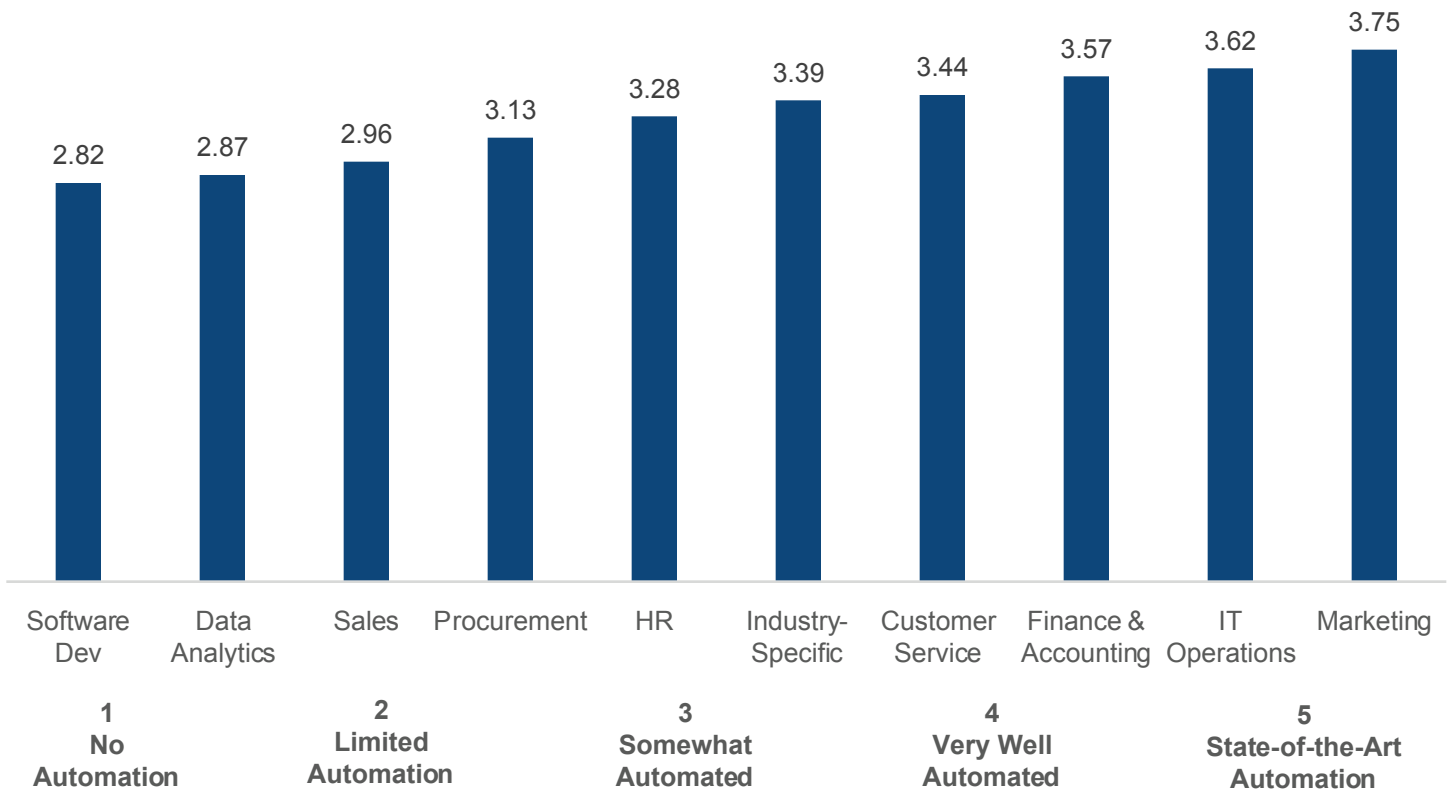spondents selected 1 - Not as Good as Most, while just 35% said 4 - Very Mature or 5 - State of the Art. Combining all other remaining industries yields a mean of 3.32, with 4% selecting 1 - Not as Good as Most and 47% selecting 4 - Very Mature or 5 - State of the Art.

Retail

- 2 - Better Than Some: 6%
- 5 - State of the Art: 26%
- 3 - Better Than Most: 24%
- 4 - Very Mature: 44%

Mean 3.90

Telco

- 2 - Better Than Some: 3%
- 5 - State of the Art: 18%
- 3 - Better Than Most: 29%
- 4 - Very Mature: 50%

Mean 3.83

Finance

- 1 - Not as Good as Most: 2%
- 2 - Better Than Some: 7%
- 5 - State of the Art: 26%
- 3 - Better Than Most: 26%
- 4 - Very Mature: 39%

Mean 3.80

Manufacturing

- 1 - Not as Good as Most: 8%
- 5 - State of the Art: 6%
- 2 - Better Than Some: 24%
- 4 - Very Mature: 29%
- 3 - Better Than Most: 32%

Mean 2.98

All Other

- 1 - Not as Good as Most: 4%
- 5 - State of the Art: 14%
- 2 - Better Than Some: 21%
- 4 - Very Mature: 33%
- 3 - Better Than Most: 28%

Mean 3.32

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AUTOMATION MATURITY

Respondents were also asked to estimate the amount of automation deployed for a variety of business functions. This was also done on a five-point scale ranging from 1 - No Automation to 5 - State-of-the-Art Automation. Marketing is the most automated, with a mean of 3.75. IT operations is also highly automated, with a mean of 3.62. Not surprisingly, software development was the least automated at a mean of 2.82. Data analytics and sales were also at the low end of automation deployed, with means under 3.

How would you rate your organization's use of automation for the following processes?

Software Dev	Data Analytics	Sales	Procurement	HR	Industry-Specific	Customer Service	Finance & Accounting	IT Operations	Marketing
2.82	2.87	2.96	3.13	3.28	3.39	3.44	3.57	3.62	3.75

1 No Automation	2 Limited Automation	3 Somewhat Automated	4 Very Well Automated	5 State-of-the-Art Automation

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AUTOMATION DRIVERS AND CHALLENGES

As it should be, CIOs are most often driving new automation projects, with 63% of organizations naming the CIO. VP-level IT leaders are the next-most mentioned as driving automation projects at 59%. Business leaders make their first appearance as drivers of automation projects with business executives mentioned as driving automation projects at 54%, and business line leaders in fourth place at 51%. IT operations leaders are the only other significant group at 46%.

Who is the driving force behind automation projects in your organization?

Role	Percentage
CIO	63%
VP-Level IT Leadership	59%
Executive Business Leaders	54%
Business Line Leaders	51%
IT Operations Leaders	46%
ITSM-Related Initiatives	11%
Architects	6%
Test Leadership	4%
Development Leadership	3%
CISO	3%
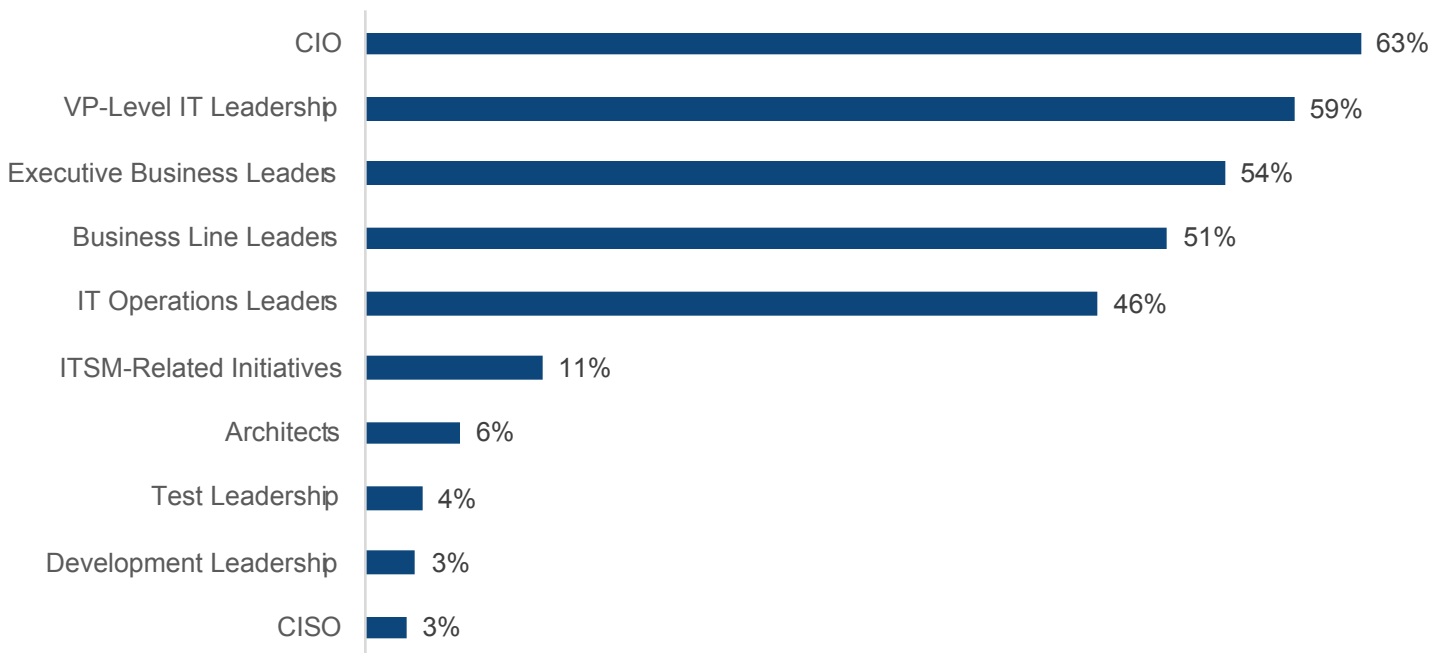
When asked what is preventing automation from happening faster, lack of processes tops the list at 42%. Those who have worked to automate business processes know that it is imperative to consider how a process is working in its manual state and rethink how it should work when automated. Improve the process before automating the process or you will just have a bad automated process. Simply automating processes the same way they have always been done is like paving a cow path. Existing terrain and vegetation have caused the cows to move in patterns that wear a path. Simply paving that path is a moderate improvement because it will handle wear, tear, and weather much better. However, that path may not be the most efficient means to move the cows around. Before going to all the effort of paving the path, consider how and when cows must move. It may make sense to remove some trees, grade the terrain, and pick a straight line to make a cow highway. This is more effort up front, but a more efficient process when finished. Studying existing processes before automating them can yield a long list of duplicative or unnecessary steps since the workflow, when automated, can and should reduce redundancies. Processes might be well documented, but workers may not follow the process or may have adjusted for efficiencies, but did not update the documentation. Other work might get done, but lack formal processes or standardization. Processes should always be studied before automating them.

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AUTOMATION DRIVERS AND CHALLENGES

Too many task-specific tools is the next-most mentioned reason for slowing automation adoption at 41%. Tools for automation also appear in fourth place at 36% in the form of homegrown tools, which are hard to maintain, and in fifth place at 32% as a lack of tools. CxOs were more likely than others to name these three tool options as the reasons for slow automation adoption.

What is preventing you from automating IT and business processes more quickly?

Category	Percentage
Lack of processes	42%
Too many task-specific tools	41%
Immediate cost savings not attractive	39%
Supported by homegrown tools that are hard to maintain	36%
Lack of tools	32%
Lack of expertise	28%
Lack of development resources	22%
Lack of executive support	20%
Not a priority	16%
No coordination or cooperation across teams	15%

Automation can be achieved a number of different ways. Some will build homegrown tools, which might be very efficient to start. However, IT organizations are service organizations, not product companies, and homegrown tools can become a burden to maintain given the day-to-day pressures on IT. Only 4% of organizations say they use homegrown tools. These tend to be mid-sized and larger organizations with more development resources. Small companies do not have the capacity to consider this path.

Others will acquire commercially available software, but focus on task-specific tools. This can also be a quick way to automate, but over time, a large number of disparate single-purpose tools can become a burden to configure and update. It can also be harder to document and train new employees on a long list of tools. Thirty-six percent are using task-specific tools for some automation.

Many organizations have struggled with a large number of task-specific tools, and many others have the benefit of the experience of those who have gone before them as they start down the path to automation. These organizations are looking to broader, multipurpose automation tools, such as workload automation (WLA) on the IT side of the house, or robotic process automation (RPA) for business processes. Both approaches are broad, and while WLA is generally thought of as an IT operations tool, EMA is seeing increasing use of WLA directly for business processes, often where files are being moved regularly or where business users are interested in the status and outcomes of workflows that directly affect their business unit. Likewise, EMA found that many are using RPA on a limited basis for some IT process automation. Overall, 66% say they are moving their automation efforts to more broad automation tools; however, this jumps to 78% when looking just at CxO responses.
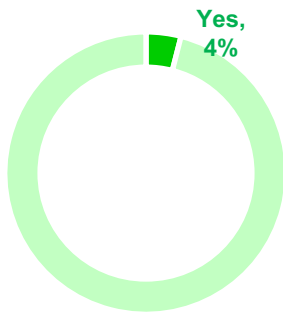
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AUTOMATION DRIVERS AND CHALLENGES

As automation increases in importance, a new trend to oversee and implement automation is to create an Automation Center of Excellence (COE). While only 7% have an established COE, 50% are planning to have a COE within 12 months. Finance leads this trend, with 11% reporting a functioning COE.
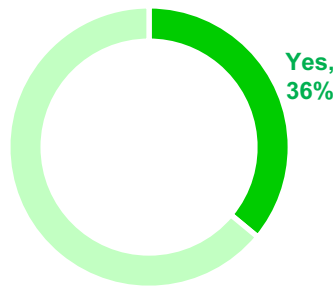
Most organizations have numerous automation projects underway. Fully 74% of organizations say they are actively looking for new use cases for automation. Manufacturing has been identified as a late comer to business and IT process automation (although manufacturing has put significant energies into automating manufacturing processes). Looking for new use cases for automation is the one area where manufacturing is in the lead, with 85% of manufacturing respondents looking to expand automation.

Many organizations see automation as a means to increased productivity, to function quicker, or to reduce staffing costs. These are achievable and appropriate reasons to automate. However, EMA believes the more strategic reason for deploying automation is in support of digital transformation. Digital transformation is more than just automating tasks. Eliminating entire functions, radically changing customer or trading partner interfaces, or eliminating or reducing brick and mortar locations by deploying online and mobile customer interactions are all transformations. Overall, 44% of respondents are expanding automation in support of digital business processes. The three industries leading in automation, retail, telco, and finance also lead here, with 60% of each using automation for digital transformation. Manufacturing lags with only 21% using automation for digital transformation.

Automation with homegrown tools
Yes, 4%

Automation with task-specific tools
Yes, 36%

Moving to broader automation tools
Selected by 78% of CxOs

Yes, 66%

Automation COE
Yes, 7%

Finance leads in active COE at 11%

Planing, 50%

Looking for new use cases for automation
Manufacturing leads at 85%

Yes, 74%
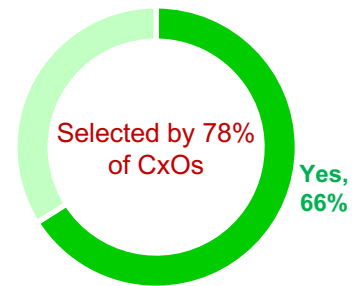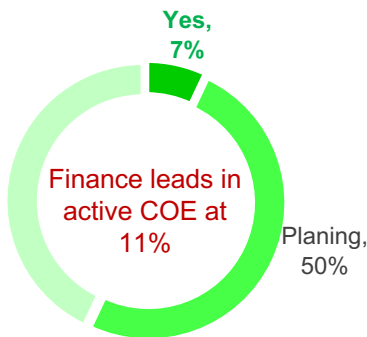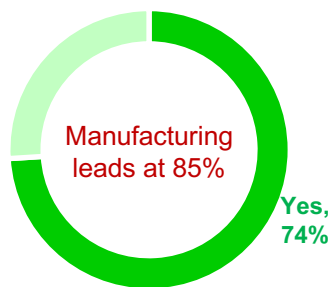
Expanding automation for digital business processes
Retail, Telco, & Finance lead at 60% Manufacturing lags at 21%

Yes, 44%
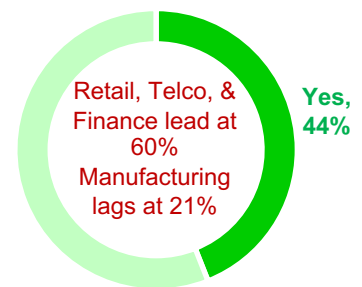
AUTOMATION DRIVERS AND CHALLENGES

While one of the primary goals for automation projects is often to reduce costs, staff reductions due to automation are rare, with only 14% of respondents having reduced staff due to automation. Far more common are the 67% who did reduce future hiring plans as a result of automation, and the 20% who focused existing staff on more valuable tasks. For 13%, automation had no impact on staffing levels or hiring plans.

Reduced staff

Yes, 14%
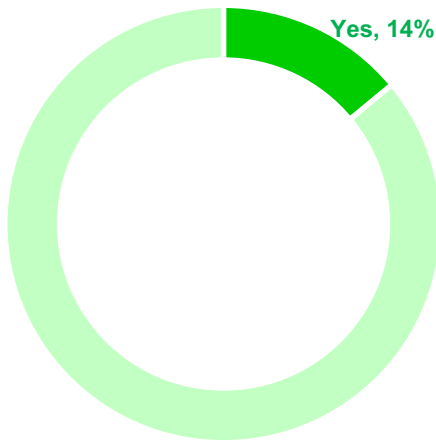
Reduced hiring plans

Yes, 67%
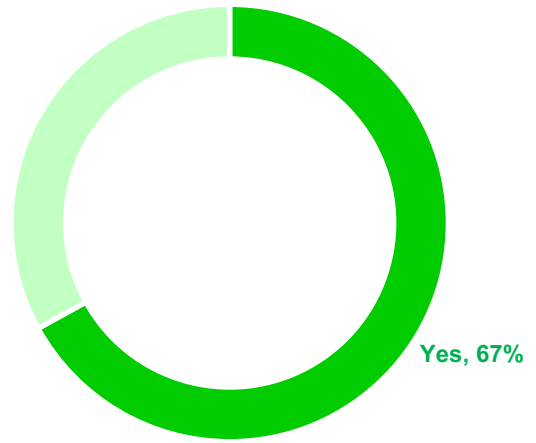
Focused staff on more valuable tasks

Yes, 20%
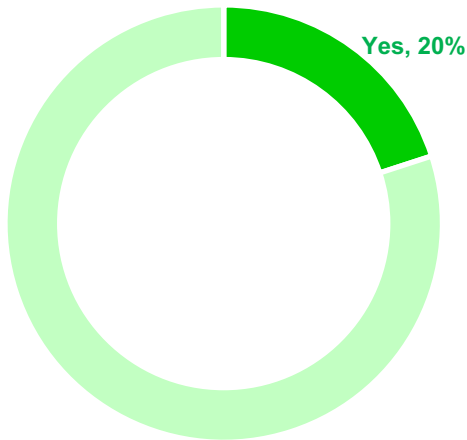
No change to staff or hiring plans

Yes, 13%
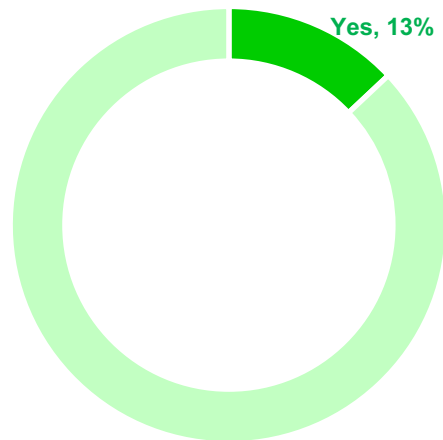
AUTOMATION DRIVERS AND CHALLENGES

Overall, WLA (47%) and RPA (46%) are most mentioned as types of automation that enable digital transformation. Separating business job titles from IT job titles, WLA (56% business and 39% IT) is the most mentioned by IT and second-most by business. RPA (65% business and 28% IT) is the most mentioned by business, but drops to fifth place for IT behind cloud automation (34% IT), customer support automation (31% IT), and release automation (29% IT). Business job titles rank marketing automation (43% business) in third place. EMA believes RPA could play a bigger role in some IT process automation and WLA could be more effective than RPA in 35% of business process use cases. Clearly, both WLA and RPA are underlying automation that enable and support digital transformation.

Which automation technologies do you believe are the key enablers of enterprise digital transformation?

Technology	Business	IT
Workload Automation	56%	39%
Robotic Process Automation	65%	28%
Marketing Automation	43%	24%
Network Configuration Automation	30%	28%
Release Automation	28%	29%
Cloud Automation	21%	34%
Customer Support Automation	22%	31%
Approval Management Automation	10%	27%
Business Process Automation	8%	27%
Systems Configuration Automation	10%	15%
Workflow Automation	5%	19%

■ Business ■ IT

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AUTOMATION DRIVERS AND CHALLENGES

It takes more than tools to digitally transform an organization. It also takes vision, commitment, and significant IT support, both development and operations. Seventy-six percent are moving ahead with digital transformation and believe their IT department is able to support digital transformation projects even as some are dealing with or need more automation in IT. Twenty-four percent are not ready to support digital transformation, with 2% waiting on the business, 20% waiting on IT, and 2% having no plans to transform.

76%
HAVE IT READY AND DOING DIGITAL TRANSFORMATION PROJECTS EVEN AS SOME IT ARE NOT FULLY PREPARED.

IT Ready for Digital Transformation

IT Highly Automated, Ready and Able, 12%

IT Automated and Able, 15%

Some in Finance (23%) and Retail (16%) lead the IT Highly Automated group.

IT Is Supporting While Increasing Automation, 21%

IT Is Supporting But Needs More Automation, 28%
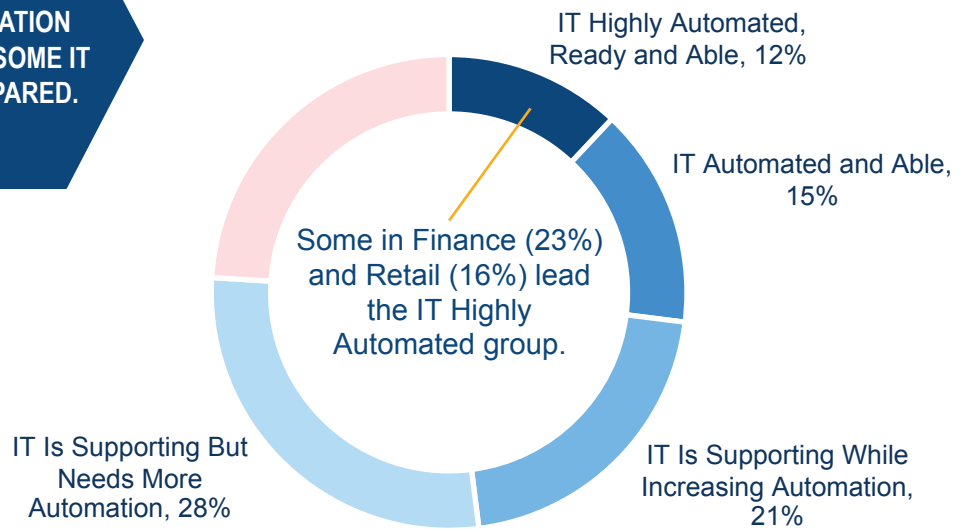
24%
IT IS NOT READY, BUSINESS IS NOT READY, OR NO PLANS

IT not Ready/not Doing Digital Transformation

Waiting For IT To Be Ready 15%

Outsourcing - IT Not Ready 5%

IT Is Ready, Business Not Ready 2%

19% of Manufacturing is outsourcing digital transformation and is by far the biggest in this category.

No Plans 2%

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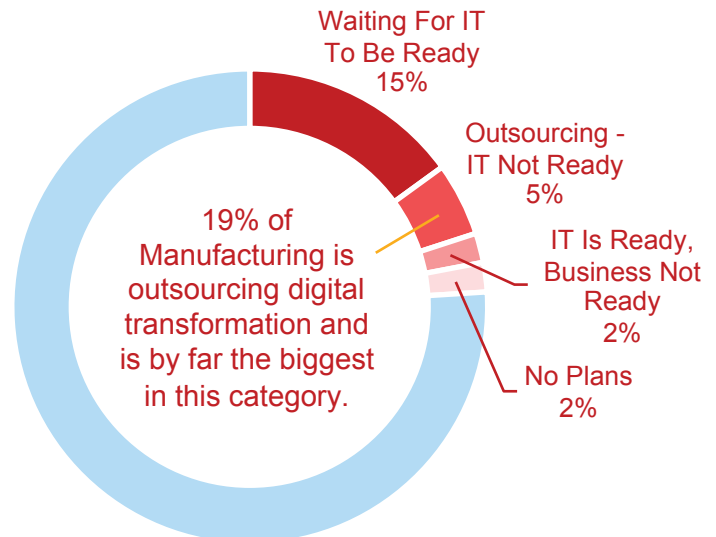
AUTOMATION DRIVERS AND CHALLENGES

Significant advancements have been made in AI in recent years, and the pace at which AI is improving remains strong. Most forms of automation will benefit from AI, and 62% of respondents believe AI will improve automation within three years. Another 36% believe it will take longer than three years. Just 2% do not expect AI to improve automation.

Do you believe that artificial intelligence capabilities will improve automation within the next 12 months?

Yes, significantly	18%
Yes, but it may take 12-36 months	44%
Yes, but it will take longer than 36 months	36%
No, I do not see how AI could improve automation	2%

SUMMARY OF STATE OF AUTOMATION BY REVENUES

UNDER $5 MILLION
- Automation is not being used to support digital business processes
- No automation COE as yet, but 7% planning an automation COE
- 100% are thinking of increasing use of automation
- 100% are trying to rationalize onto fewer tools
- None mention task-focused tools
- None mention homegrown tools

$100 MILLION TO UNDER $1 BILLION
- 53% are using automation to directly support digital business processes
- 9% have an automation COE, 53% are planning an automation COE
- 71% are thinking of increasing use of automation
- 61% are trying to rationalize onto fewer tools
- 38% have task-focused tools
- 6% are doing most automation with homegrown tools

$5 MILLION TO UNDER $20 MILLION
- 4% are using automation to directly support digital business processes
- 8% have an automation COE, 14% are planning an automation COE
- 100% are thinking of increasing use of automation
- 92% are trying to rationalize onto fewer tools
- 6% have task-focused tools
- None mention homegrown tools

$1 BILLION OR MORE
- 69% are using automation to directly support digital business processes
- 15% have an automation COE, 79% are planning an automation COE
- 29% are thinking of increasing use of automation
- 34% are trying to rationalize onto fewer tools
- 63% have task-focused tools
- 10% are doing most automation with homegrown tools

$20 MILLION TO UNDER $100 MILLION
- 38% are using automation to directly support digital business processes
- 2% have an automation COE, 45% are planning an automation COE
- 90% are thinking of increasing use of automation
- 79% are trying to rationalize onto fewer tools
- 30% have task-focused tools
- 2% are doing most automation with homegrown tools

GOVERNMENT OR NONPROFIT
- 44% are using automation to directly support digital business processes
- 14% have an automation COE, 51% are planning an automation COE
- 81% are thinking about increasing use of automation
- 53% are trying to rationalize onto fewer tools
- 36% have task-focused tools
- 5% are doing most automation with homegrown tools

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BUSINESS PROCESS AUTOMATION

To look deeper at business process automation, only business job titles were asked the questions in this section. Respondents were asked their satisfaction with business process automation in their organization. Customer service has the highest satisfaction, with a mean of 3.83 on a five-point scale where 5 is very satisfied. Finance and accounting automation scored in second place at 3.82. Business folks do recognize the strides in automating IT operations and scored it third at 3.69. Data analytics and software development scored lowest at 3.02 and 3.03, respectively.

How satisfied are you with the level of automation within each of the following?

Category	Score
Data Analytics	3.02
Software Development	3.03
Sales	3.22
Procurement	3.42
HR	3.52
Industry-Specific	3.55
Marketing	3.60
IT Operations	3.69
Finance & Accounting	3.82
Customer Service	3.83

1	2	3	4	5
Not Satisfied	Slightly Satisfied	Average	Satisfied	Very Satisfied

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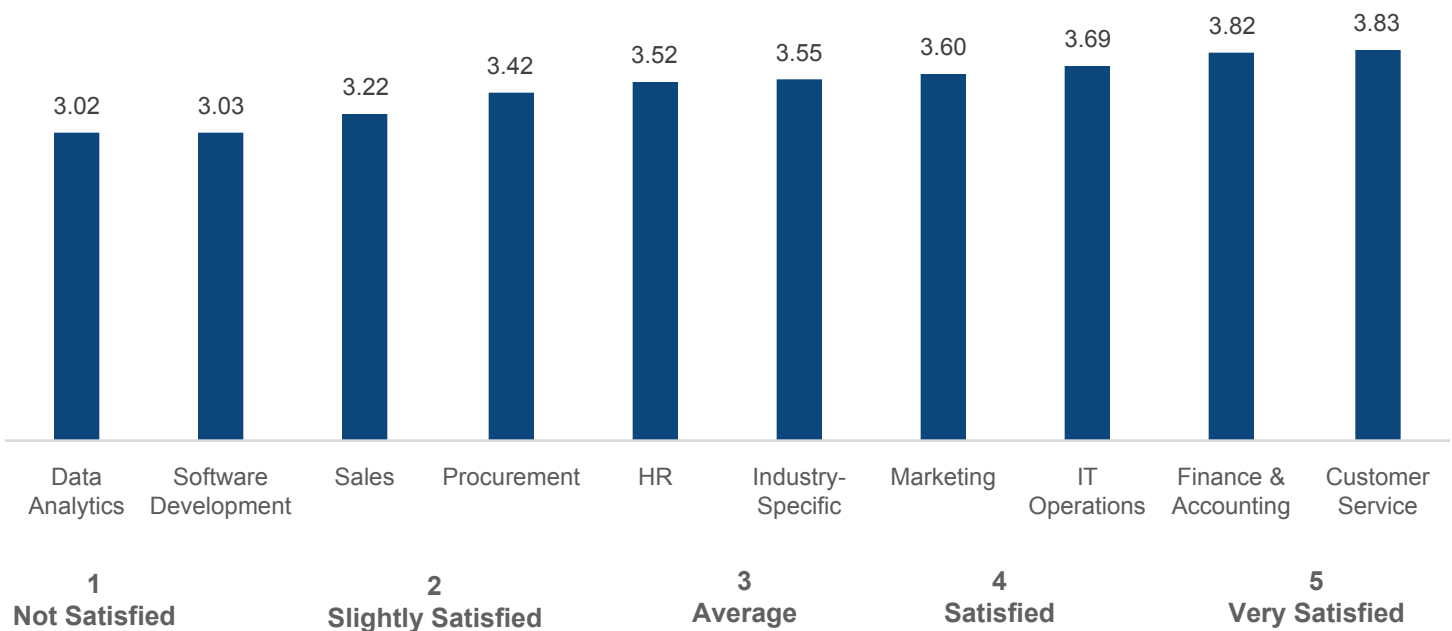
BUSINESS PROCESS AUTOMATION

While finance and accounting scored second-highest in satisfaction, more automation is desired with 27% feeling that finance and accounting would benefit most from increased automation. Customer service, the highest in satisfaction with current automation, was second-most mentioned as benefiting from increased automation at 21%. Interestingly, software development (1%) and data analytics (2%) were thought least likely to benefit from increased automation. In contrast to these low numbers, EMA believes there is significant opportunity to improve both software development and data analytics with increased automation.
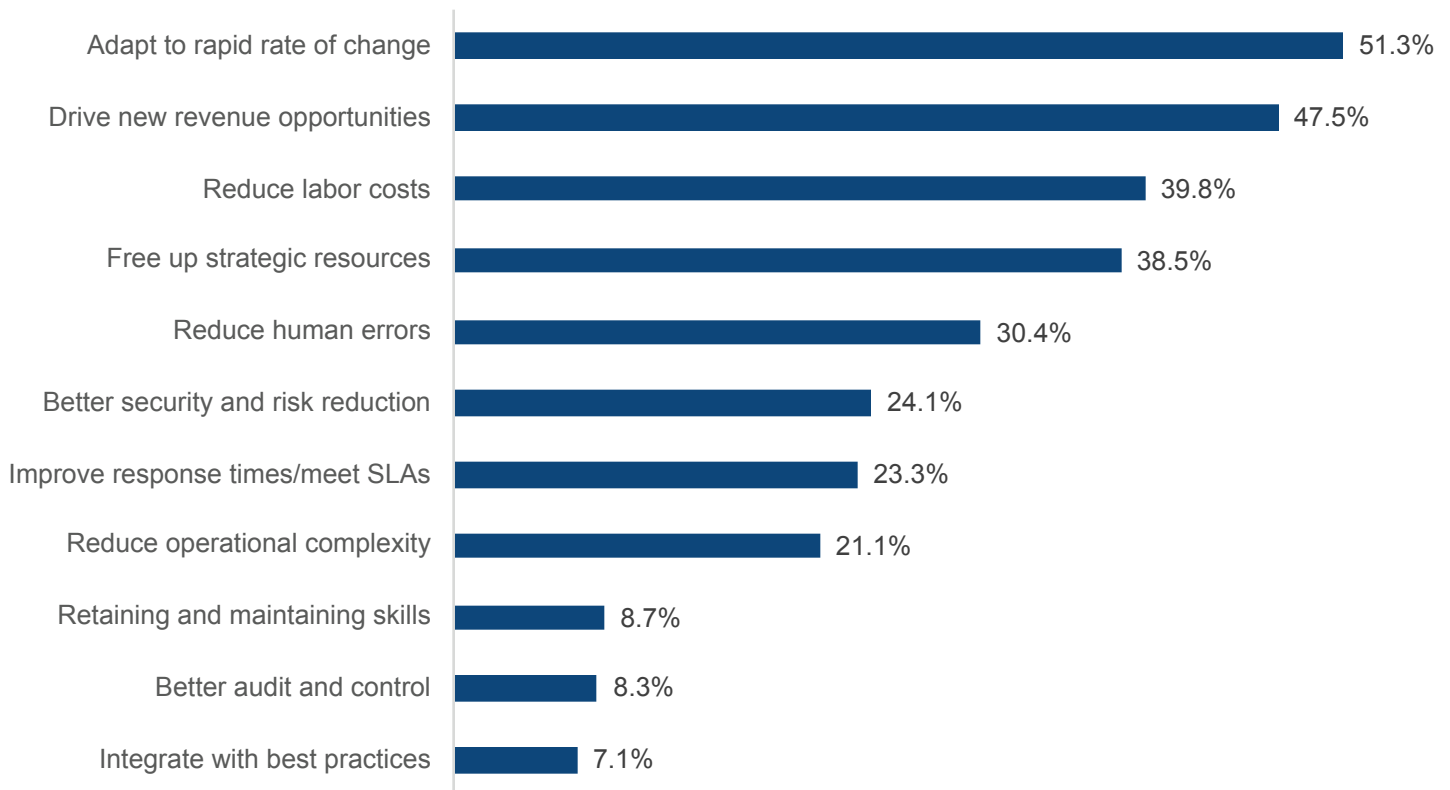
Which of the following would most benefit from increased automation?
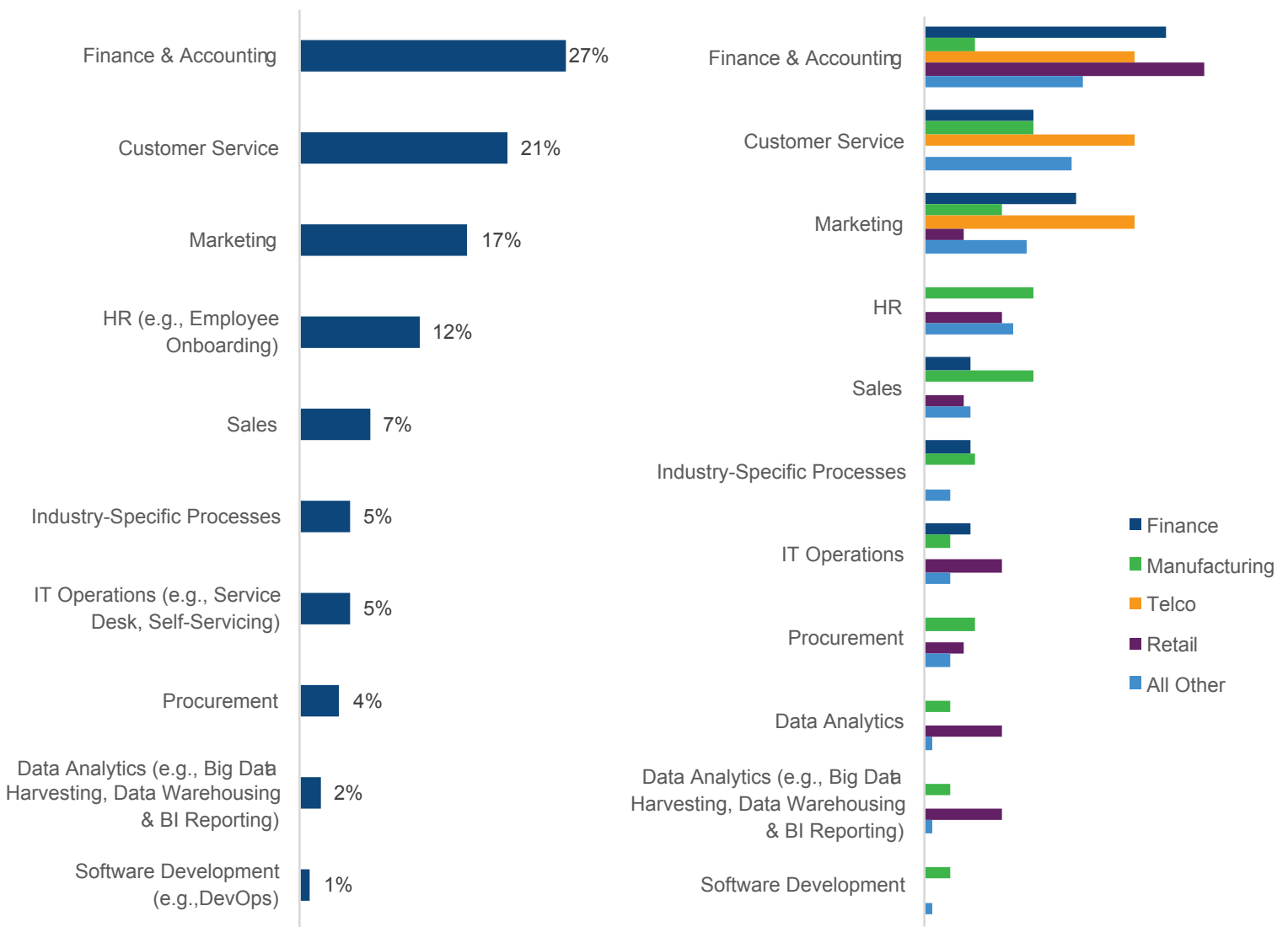
BUSINESS PROCESS AUTOMATION

When asked about the most important needs driving process automation, 51% of business users list adapting to rapid rate of change. Driving new revenue opportunities is second at 47%, although EMA has data that shows poor results in using automation to drive new revenue. Reducing labor costs (39%), freeing up strategic resources (38%), and reducing human errors (30%) round out the top five.

What are the most important needs driving business process automation in your organization?

Category	Percentage
Adapt to rapid rate of change	51.3%
Drive new revenue opportunities	47.5%
Reduce labor costs	39.8%
Free up strategic resources	38.5%
Reduce human errors	30.4%
Better security and risk reduction	24.1%
Improve response times/meet SLAs	23.3%
Reduce operational complexity	21.1%
Retaining and maintaining skills	8.7%
Better audit and control	8.3%
Integrate with best practices	7.1%

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BUSINESS PROCESS AUTOMATION

The top three automation characteristics for business users are scalability (46%), governance/auditability (44%), and SLA awareness (43%). Unlike many products targeting IT workers, business users do not yet see the value in a community of users for plugins (4%) or in a library of prebuilt automation components (3%). EMA believes this will change as RPA and Business Process Management Systems (BPMS) support more user customization.

Which characteristics of an automation solution are most important to you?

Characteristic	Percentage
Scalability	45.8%
Governance/Auditability	44.0%
SLA awareness	42.6%
Ease of user interface	29.0%
Amount of IT involvement required	27.0%
Visibility/Dashboards	27.0%
PIs/Ease of integration	23.7%
Administrative overhead required	20.9%
Security	20.7%
Cost	12.2%
Community of users for plugins	4.3%
Library of prebuilt automation components	2.8%

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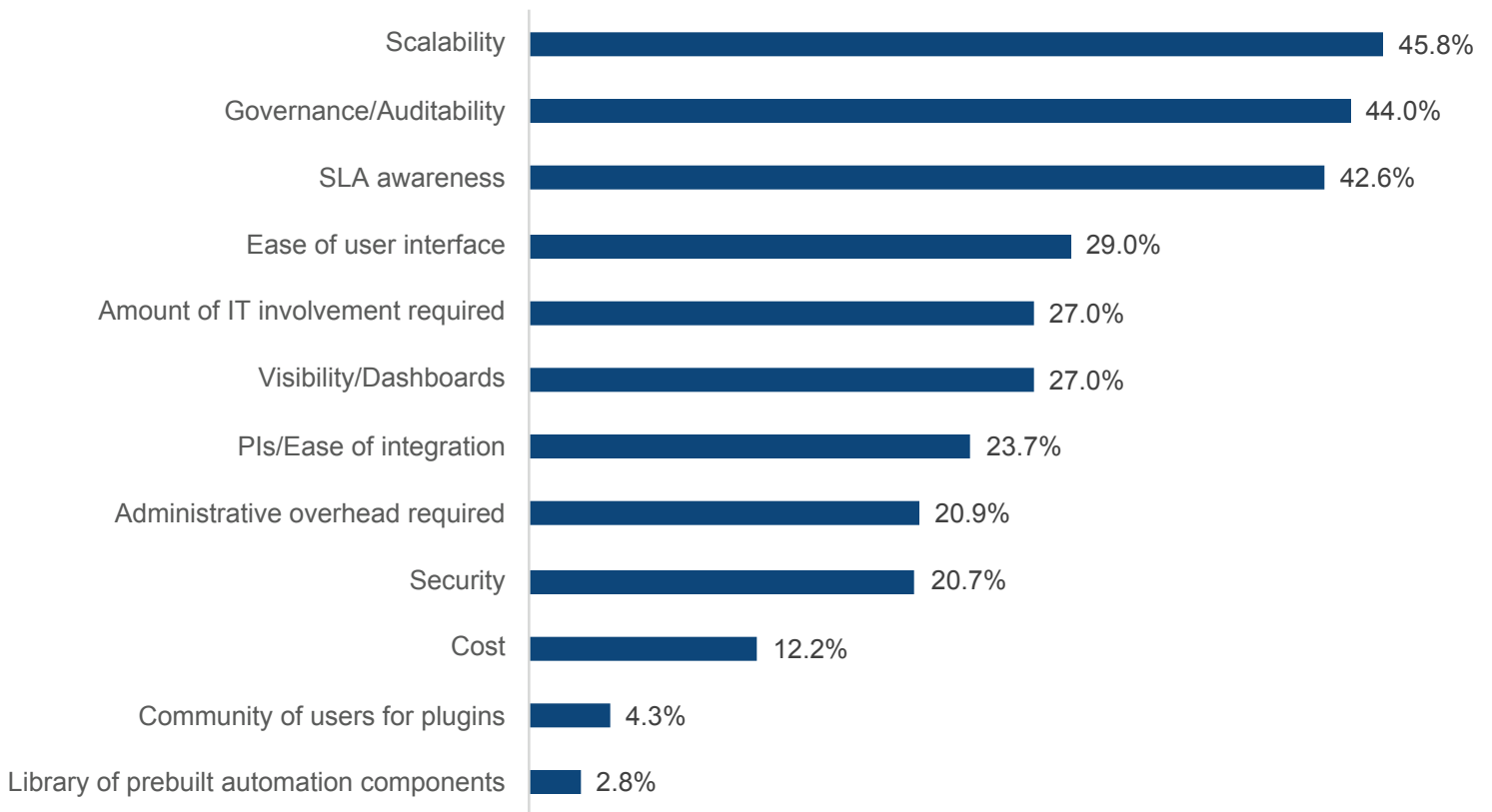
BUSINESS PROCESS AUTOMATION

Business users were asked to estimate the extent of automation across a number of business functions, both now and in 12 months. Automation is expected to increase across all functions, with software development expected to see the greatest increase in automation (8.9%) over the next 12 months. Finance and accounting are currently the most automated functions (33%), and if intentions become reality, will continue to be the most automated functions in 12 months at 41%. The order of the entire list rings true to expectations.

What percentage of the following business functions is currently automated? What percentage do you expect to be automated in 12 months?

Function	Increase	Now	In 12 Months
Procurement	3.3%	20.5%	23.8%
Data Analytics	6.6%	22.3%	28.9%
Industry-Specific Processes	8.2%	23.4%	31.6%
Sales	6.8%	24.6%	31.4%
HR	8.7%	25.2%	33.9%
Marketing	7.1%	26.0%	33.1%
Customer Service	7.9%	28.4%	36.3%
Software Development	8.9%	30.0%	38.9%
IT Operations	8.3%	32.4%	40.7%
Finance & Accounting	8.4%	33.3%	41.7%

■ Now ■ In 12 Months

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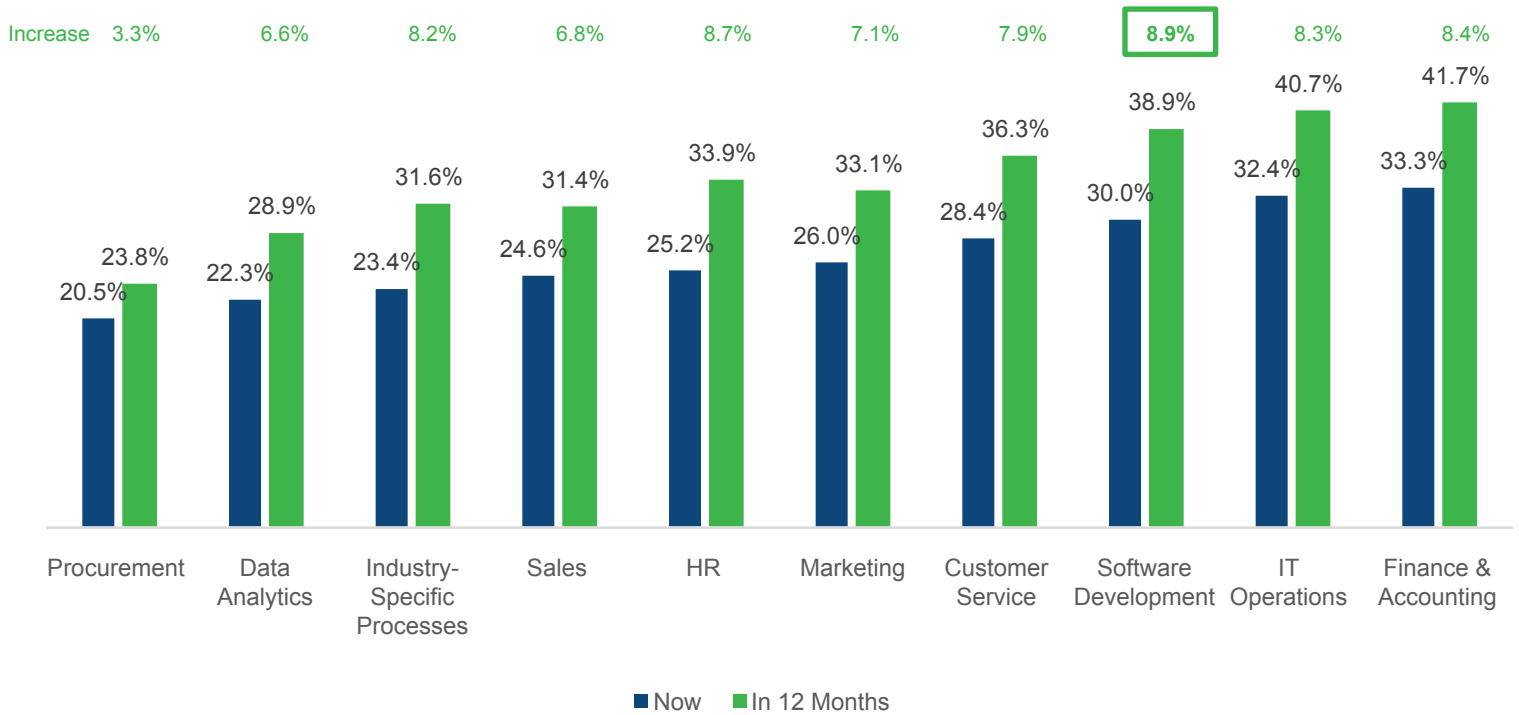
IT PROCESS AUTOMATION

Business users were also asked to choose the statement that best described how they were pursuing business process automation. Nearly one-third are changing processes and data retention practices to empower machine learning. Those using RPA total 44%, but they are not all enthusiastic about it. Twenty percent are using bots with current screens, but prefer and are moving toward using more APIs, 14% are redesigning processes specifically to be managed by bots, and 10% are "patching up gaps" in existing processes with bots.
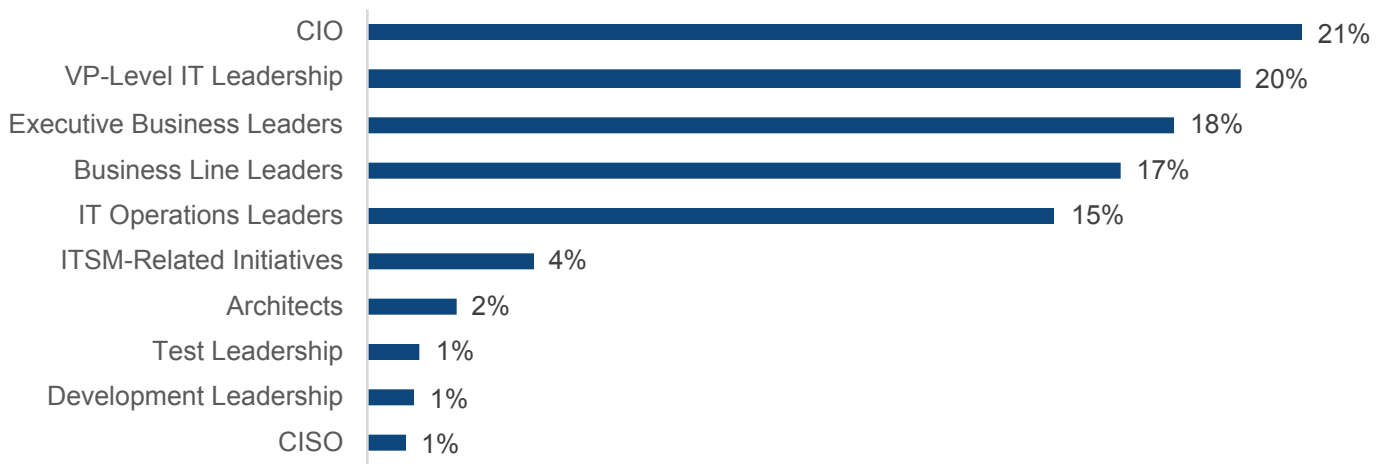
How aggressively is your organization pursuing business process automation?

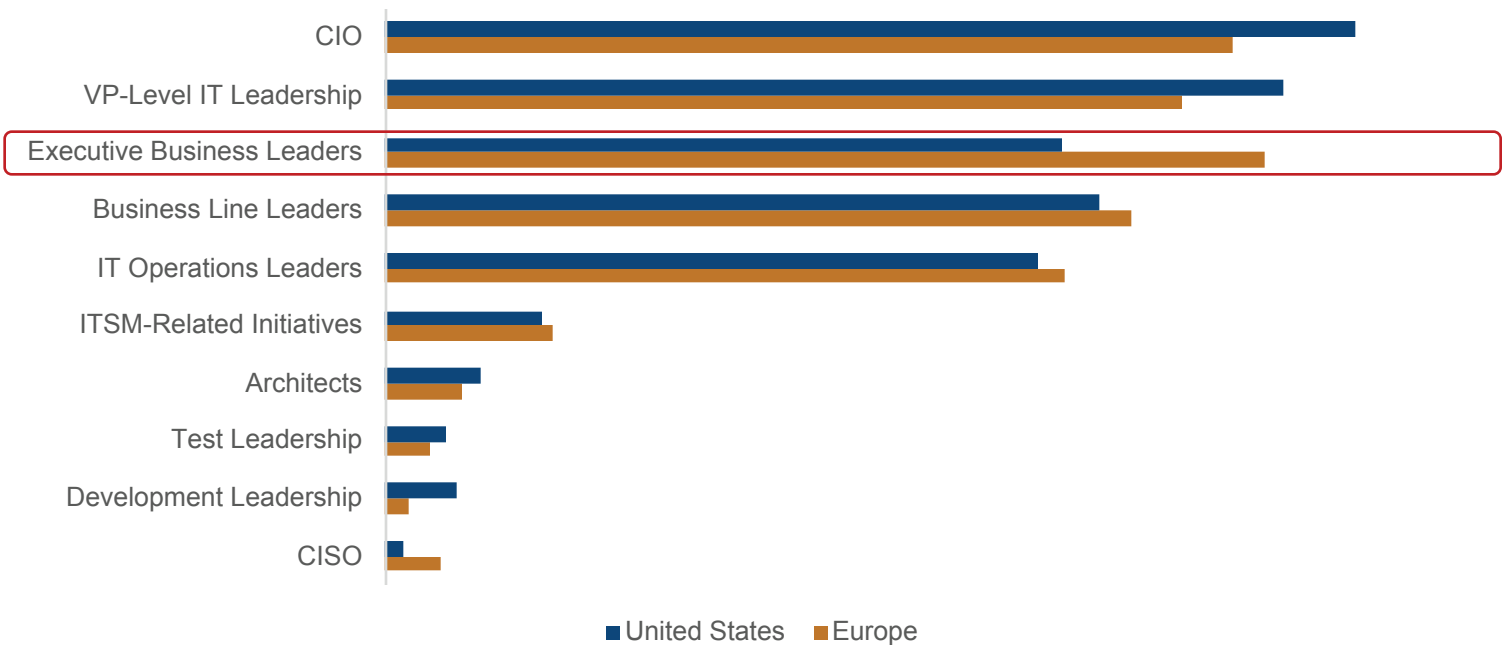|	
We are changing processes and data retention practices to empower machine learning to improve some processes	31%
We are using bots with current screens, but prefer and are moving toward using more APIs	20%
We are redesigning processes specifically to be managed by bots	14%
We focus on upgrading or adding business applications to increase productivity	13%
We are "patching up gaps" in existing processes with bots	10%
We are just beginning to evaluate automation opportunities	5%
We have established an automation competency to maximize performance, throughput, accountability, and compliance.	4%
We have no plans for automation	2%

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IT PROCESS AUTOMATION

To look deeper at IT process automation, only IT job titles were asked the questions in this section. The driving force behind IT automation projects is the CIO (21%), followed by VP-level IT leadership (20%), and then executive business leaders (18%) and business line leaders (17%). IT operations (15%) rounds out the top five. These results are similar to the results for overall automation projects, although here only one response was allowed. Comparing the United States to Europe, the results are similar, except executive business leaders are significantly more involved in IT process automaton in Europe.

Who is the driving force behind IT automation projects in your organization?
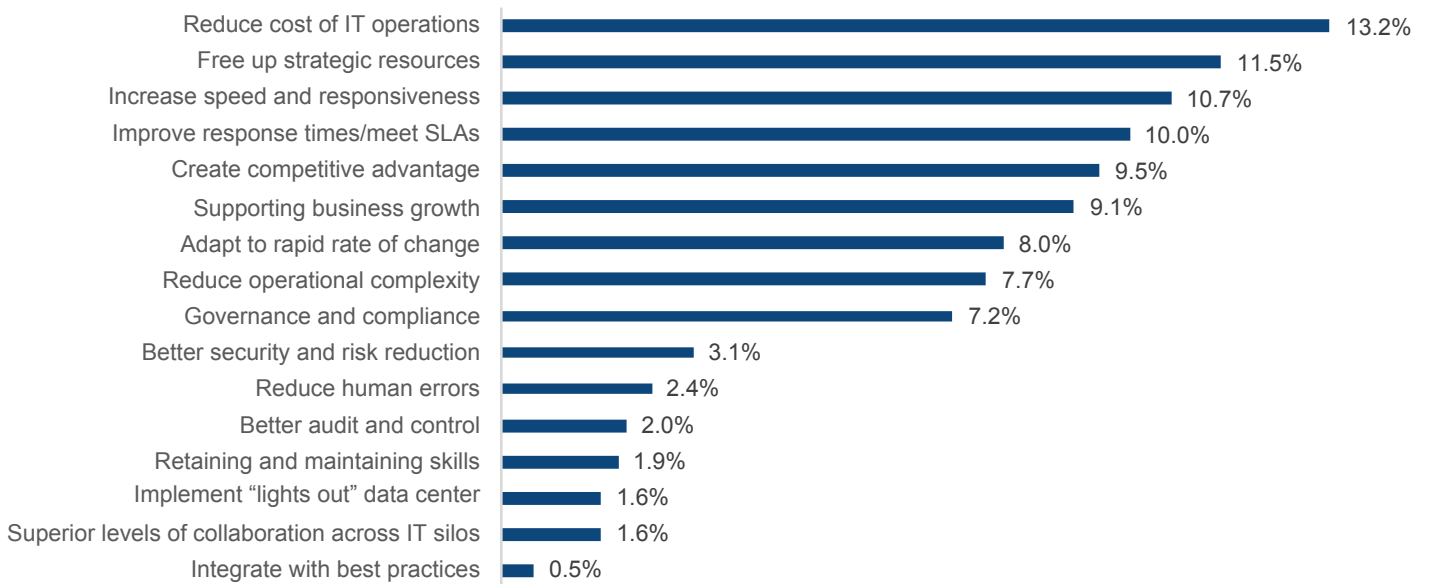
CIO	21%
VP-Level IT Leadership	20%
Executive Business Leaders	18%
Business Line Leaders	17%
IT Operations Leaders	15%
ITSM-Related Initiatives	4%
Architects	2%
Test Leadership	1%
Development Leadership	1%
CISO	1%

By Region

CIO
VP-Level IT Leadership
Executive Business Leaders
Business Line Leaders
IT Operations Leaders
ITSM-Related Initiatives
Architects
Test Leadership
Development Leadership
CISO

■ United States ■ Europe

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IT PROCESS AUTOMATION

The top three most mentioned needs driving IT automation are to reduce the cost of IT operations (13.2%), followed by freeing up strategic resources (11.5%) and increasing speed and responsiveness (10.7%). Improving response times and meeting SLAs (10%) and creating competitive advantage (9.5%) also received significant responses. Comparing the United States to Europe reveals similar results, with Europe being more concerned with reducing the cost of IT operations, creating competitive advantage, and supporting business growth.

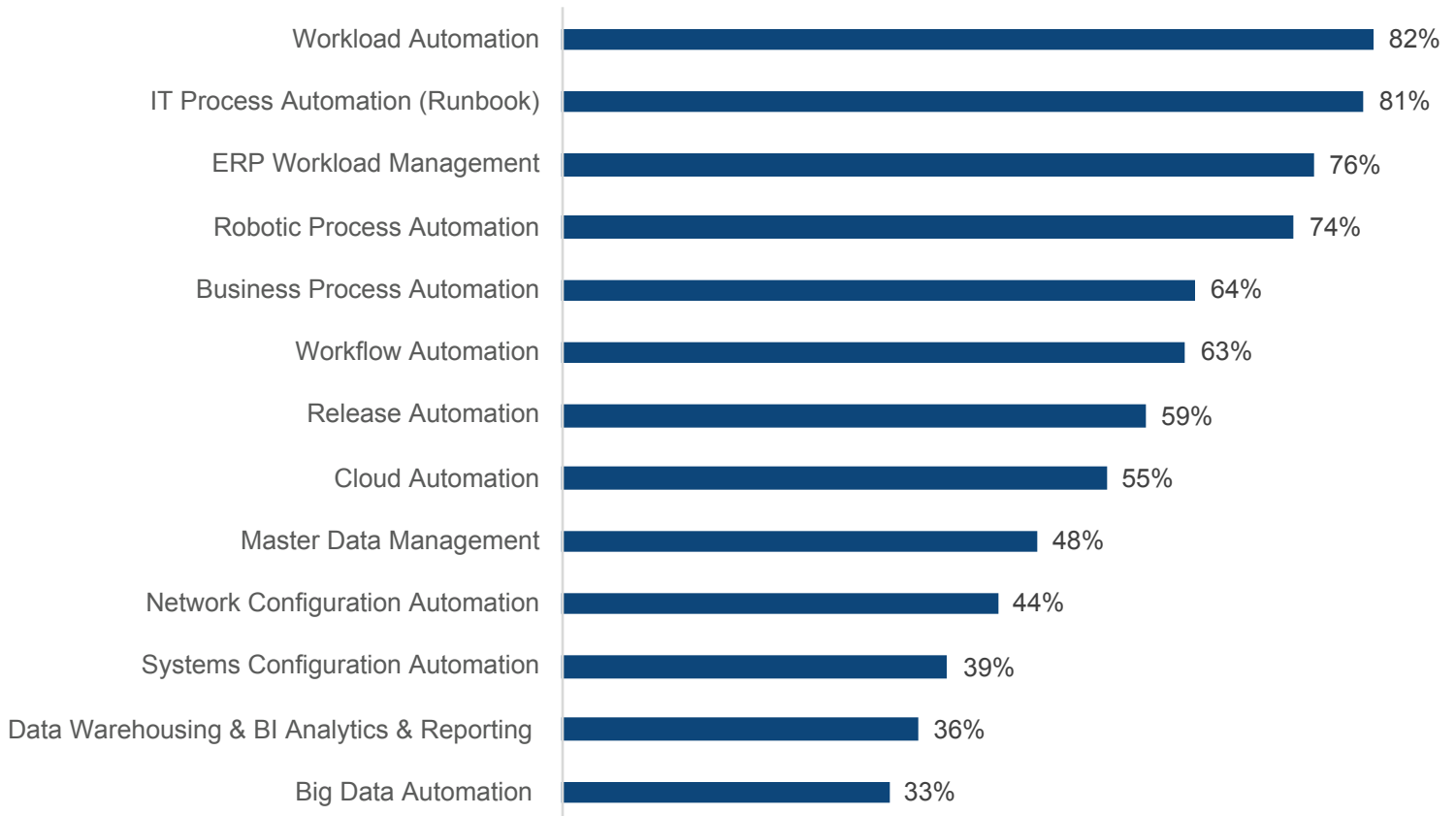## What are the most important needs driving automation in your IT operations?

Need	Percentage
Reduce cost of IT operations	13.2%
Free up strategic resources	11.5%
Increase speed and responsiveness	10.7%
Improve response times/meet SLAs	10.0%
Create competitive advantage	9.5%
Supporting business growth	9.1%
Adapt to rapid rate of change	8.0%
Reduce operational complexity	7.7%
Governance and compliance	7.2%
Better security and risk reduction	3.1%
Reduce human errors	2.4%
Better audit and control	2.0%
Retaining and maintaining skills	1.9%
Implement "lights out" data center	1.6%
Superior levels of collaboration across IT silos	1.6%
Integrate with best practices	0.5%

By Region

Legend: United States, Europe

(Categories listed, top to bottom: Reduce cost of IT operations, Free up strategic resources, Increase speed and responsiveness, Improve response times/meet SLAs, Create competitive advantage, Supporting business growth, Adapt to rapid rate of change, Reduce operational complexity, Governance and compliance, Better security and risk reduction, Reduce human errors, Better audit and control, Retaining and maintaining skills, Implement "lights out" data center, Superior levels of collaboration across IT silos, Integrate with best practices)

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IT PROCESS AUTOMATION

Looking at the types of IT automation in use, WLA tops the list at 82%, followed closely by IT process automation (Runbook) at 81%, ERP workload management at 76%, and RPA 74%. Big data automation (33%) and data warehousing, BI analytics, and reporting (36%) are the least deployed.

What forms of IT automation does your firm deploy?

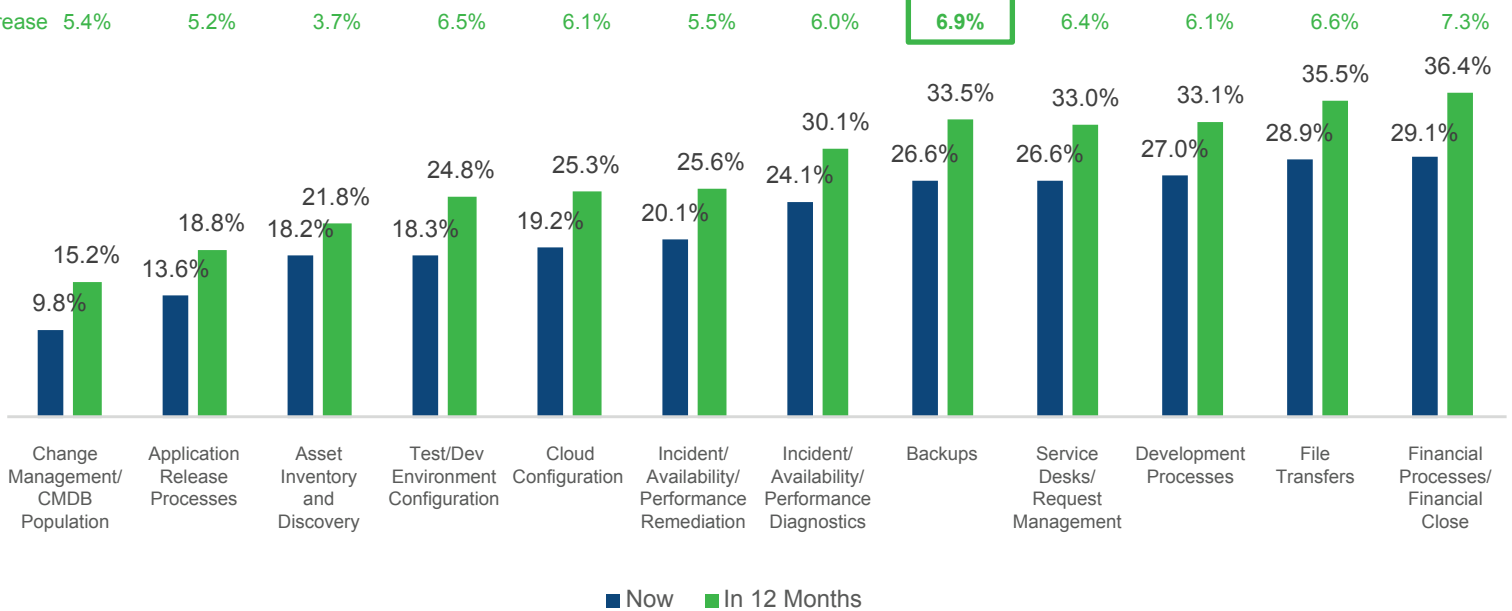|	
Workload Automation	82%
IT Process Automation (Runbook)	81%
ERP Workload Management	76%
Robotic Process Automation	74%
Business Process Automation	64%
Workflow Automation	63%
Release Automation	59%
Cloud Automation	55%
Master Data Management	48%
Network Configuration Automation	44%
Systems Configuration Automation	39%
Data Warehousing & BI Analytics & Reporting	36%
Big Data Automation	33%

IT PROCESS AUTOMATION

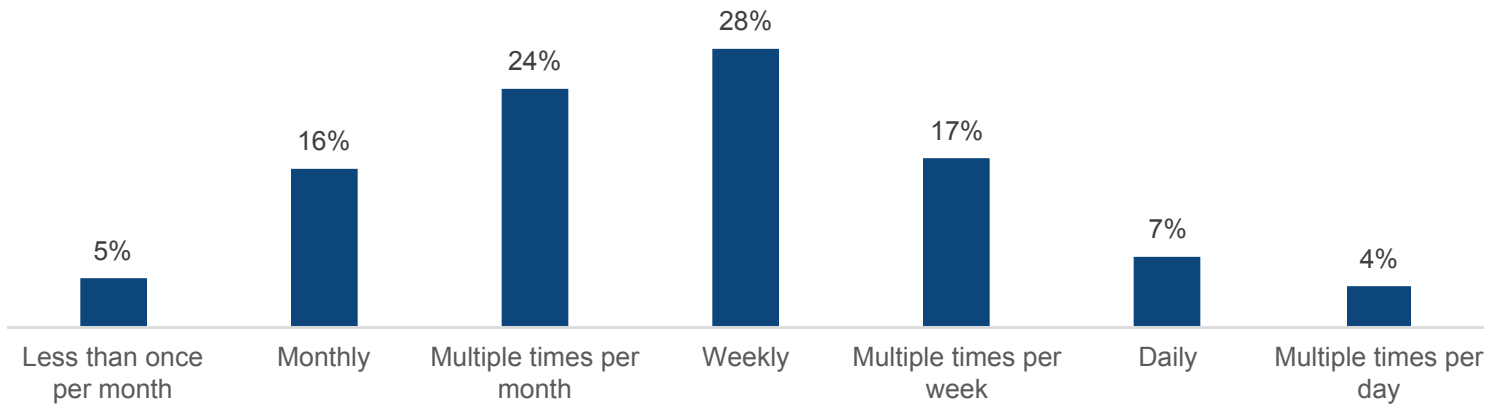IT users were asked to estimate the extent of automation across a number of IT functions, both now and in 12 months. For the purposes of this question, an automated function is one where software tools, whether commercially available or homegrown, are used to create a scalable, repeated process that replaces an IT professional's manual work in data centers and cloud deployments.

Automation is expected to increase across all IT functions, with backups expected to see the greatest increase in automation (6.9%) over the next 12 months. While this question was primarily about IT automation, finance and accounting automation was included because it is an important process for the entire organization, and it is currently the most automated function (29%) with plans to increase to 36% in 12 months. This mirrors the results for business users.

File transfers top the list for IT process automation at 29%, and will hold this position in 12 months at 35%. This is not surprising, since EMA has seen an increase in interest for managed file transfer (MFT) capabilities because they have been natively added to many WLA tools recently. The trend seems to be for WLA tools to put more emphasis on native MFT capabilities rather than integration to MFT specific tools. Development processes are the next-most automated at 27%, growing to 33%. Service desk and request management are also highly automated at almost 27%, growing to 33%. On the low end of automation are change management and CMDB population at 9.8%, growing to 15%, and application release processes at 13.6% growing to almost 19%.

What percentage of the following functions is currently automated?
What percentage do you expect to be automated in 12 months?
Mean Percentage Automated

| Increase | 5.4% | 5.2% | 3.7% | 6.5% | 6.1% | 5.5% | 6.0% | **6.9%** | 6.4% | 6.1% | 6.6% | 7.3% |

Bar chart data:

Function	Now	In 12 Months
Change Management/CMDB Population	9.8%	15.2%
Application Release Processes	13.6%	18.8%
Asset Inventory and Discovery	18.2%	21.8%
Test/Dev Environment Configuration	18.3%	24.8%
Cloud Configuration	19.2%	25.3%
Incident/Availability/Performance Remediation	20.1%	25.6%
Incident/Availability/Performance Diagnostics	24.1%	30.1%
Backups	26.6%	33.5%
Service Desks/Request Management	26.6%	33.0%
Development Processes	27.0%	33.1%
File Transfers	28.9%	35.5%
Financial Processes/Financial Close	29.1%	36.4%

■ Now ■ In 12 Months

FOR THE PURPOSES OF THIS QUESTION, AN AUTOMATED FUNCTION IS ONE WHERE SOFTWARE TOOLS, WHETHER COMMERCIALLY AVAILABLE OR HOMEGROWN, ARE USED TO CREATE A SCALABLE, REPEATED PROCESS THAT REPLACES AN IT PROFESSIONAL'S MANUAL WORK IN DATA CENTERS AND CLOUD DEPLOYMENTS.
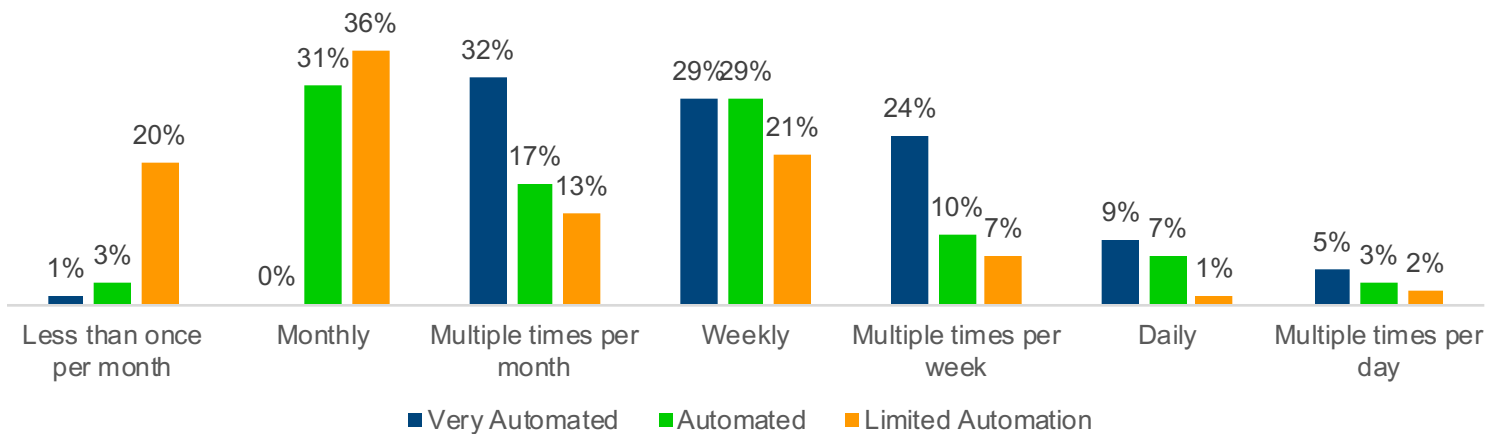
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IT PROCESS AUTOMATION

IT respondents were also asked to describe how frequently they deploy new code to production. Weekly (28%) was the most common frequency, followed by multiple times per month (24%), and multiple times per week (17%). Fifty-six percent are deploying new code to production weekly or more frequently than weekly.

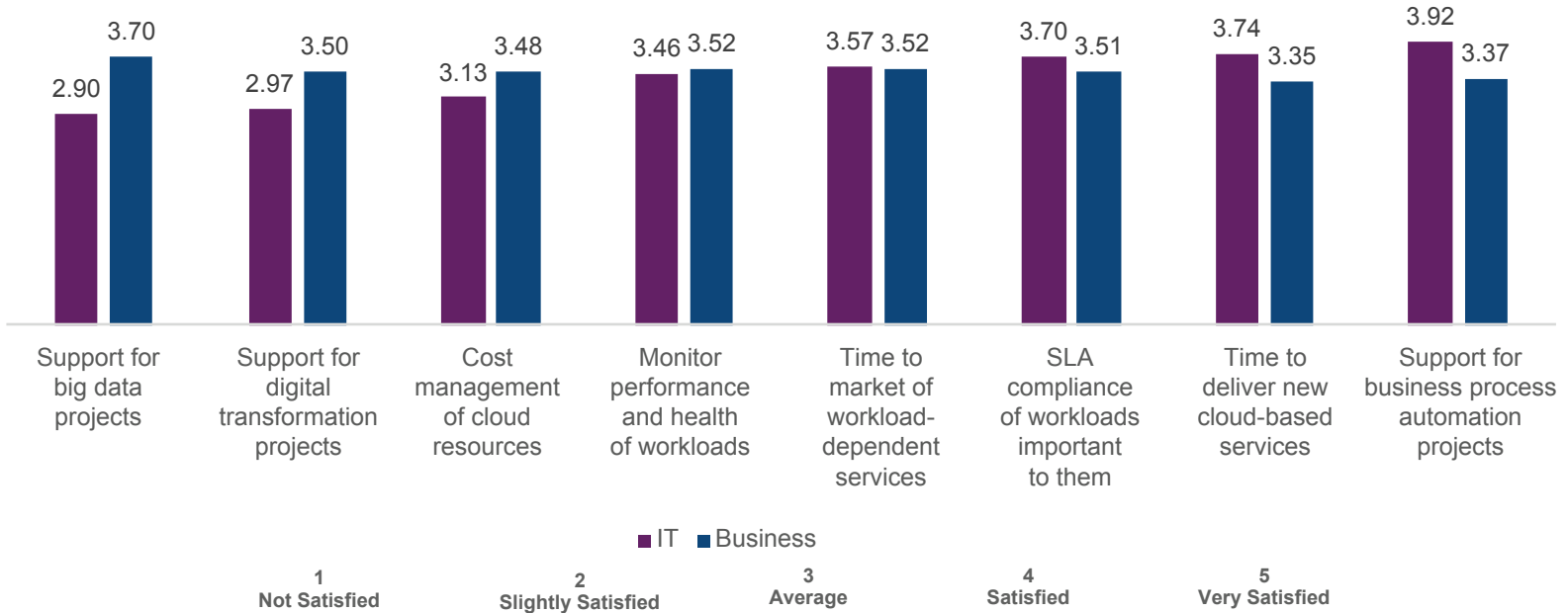## How frequently does your organization deploy new code to production?

Less than once per month	Monthly	Multiple times per month	Weekly	Multiple times per week	Daily	Multiple times per day
5%	16%	24%	28%	17%	7%	4%

By Use of Automation

	Less than once per month	Monthly	Multiple times per month	Weekly	Multiple times per week	Daily	Multiple times per day
Very Automated	1%	0%	32%	29%	24%	9%	5%
Automated	3%	31%	17%	29%	10%	7%	3%
Limited Automation	20%	36%	13%	21%	7%	1%	2%

■ Very Automated ■ Automated ■ Limited Automation

To see if greater automation drives faster code deployment, respondents were grouped by their answers to the question on automation maturity, placing 1 - Not as Good as Most and 2 - Better Than Some into the Limited Automation group, 3 - Better Than Most in the Automated group, and 4 - Very Mature and 5 - State of the Art into the Very Automated group. Those with more mature automation are more likely to deploy code more frequently. Fifty-seven percent of those in the Very Automated group deploy code weekly or faster, while 49% of those in the Automated group and only 31% of those in the Limited Automation group deploy code weekly or faster.

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BUSINESS VIEW OF IT

Both business job titles and IT job titles were presented with a version of the question gauging business satisfaction with IT support using a five-point scale, where 1 is not satisfied and 5 is very satisfied. Combining the results from both questions, we can see how business job titles describe their satisfaction with IT support and compare it to how IT job titles think business folks feel about IT support.

Business job titles rated support for big data projects with the highest mean satisfaction at 3.70. Interestingly, this is the lowest mean satisfaction from IT job titles at 2.90. Conversely, IT job titles expect business is most satisfied with support for business process automation projects with a mean of 3.92, but this was the second-lowest satisfaction mean from business job titles at 3.37. It is important to realize that this is not a direct comparison of IT and business people from the same organization; however, it is still interesting to consider how each group feels about business satisfaction with IT support.

How satisfied do you think your business users are with the following results from IT support?

	Support for big data projects	Support for digital transformation projects	Cost management of cloud resources	Monitor performance and health of workloads	Time to market of workload-dependent services	SLA compliance of workloads important to them	Time to deliver new cloud-based services	Support for business process automation projects
IT	2.90	2.97	3.13	3.46	3.57	3.70	3.74	3.92
Business	3.70	3.50	3.48	3.52	3.52	3.51	3.35	3.37

■ IT ■ Business

1	2	3	4	5
Not Satisfied	Slightly Satisfied	Average	Satisfied	Very Satisfied

WORKLOAD AUTOMATION

Workload Automation began as simple job scheduling. Some of the WLA products have existed for more than 30 years. It is one of the oldest forms of IT automation. WLA is adopted by 82% of organizations.

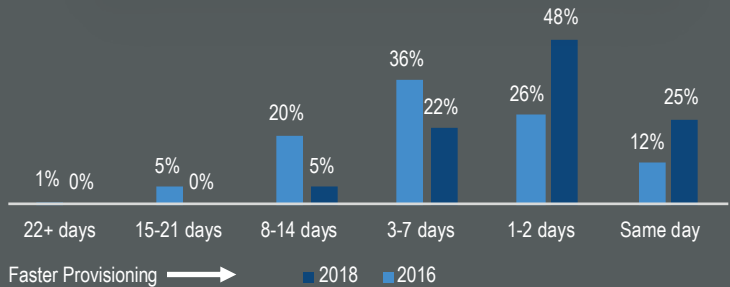**Workload Automation**
82%
Adopted
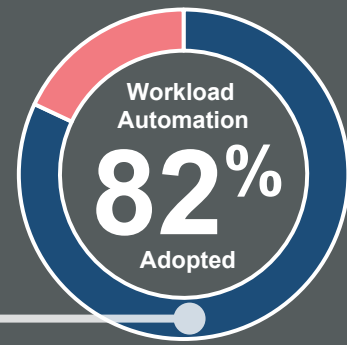
Satisfaction for WLA is higher than other forms of automation given the maturity of these products for many core functions. Satisfaction was measured on a five-point scale, where 5 is very satisfied. Lifecycle management of workflows has the highest satisfaction mean at 3.70. Supporting high availability of workloads is the second-highest satisfaction mean at 3.59. However, WLA has been undergoing significant improvements to handle modern challenges and new technologies, so some of the newer features are not as mature and have room for improvement. Provisioning new workloads to the cloud, a relatively recent need, has the lowest satisfaction mean at 3.11. This is still above average, but lower than many longer-standing requirements.

HOW SATISFIED ARE YOU WITH YOUR ORGANIZATION'S CURRENT WLA SOFTWARE REGARDING THE FOLLOWING ASPECTS?

Aspect	Mean
Provision workloads to the cloud	3.11
Rapid root cause analysis	3.14
Critical path monitoring capabilities	3.22
Support microservices architectures	3.23
Comprehensiveness of API	3.25
Effectiveness of user interface	3.25
Managed file transfer	3.29
Out-of-the-box integration	3.31
Broader IT automation	3.35
SLA management	3.36
Self-service dashboards	3.54
Rapid addition of servers/agents	3.55
High availability of workloads	3.59
Lifecycle management of workflows	3.70

1 Not Satisfied   2 Slightly Satisfied   3 Average   4 Satisfied   5 Very Satisfied

TIME TO SATISFY WORKLOAD PROVISIONING REQUESTS

	2018	2016
22+ days	1%	0%
15-21 days	5%	0%
8-14 days	20%	5%
3-7 days	36%	22%
1-2 days	26%	48%
Same day	12%	25%

Faster Provisioning ➡ ■ 2018 ■ 2016

One measure of the effects of automation is the speed with which provisioning requests are satisfied. Provisioning is getting faster with better automation. In 2016, 72% provisioned new workloads in seven days or less. In 2018, 95% provisioned new workloads in seven days or less.
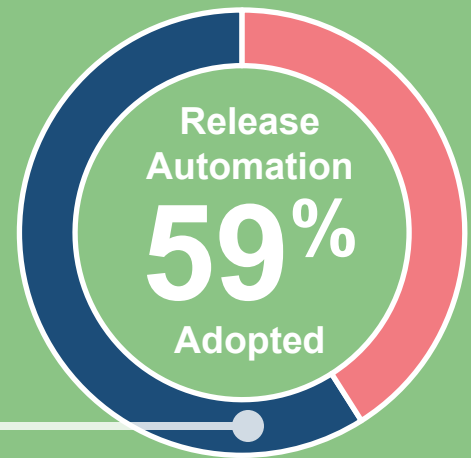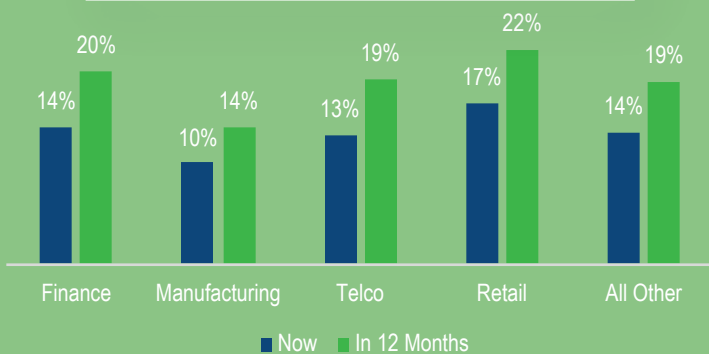
One positive and customer-facing outcome of increased automation is to provide end users with self-service capabilities. Self-service portals for business users are on the rise as more business users find value in directly monitoring the status of workloads important to them. Currently, 43% offer a self-service portal for WLA to business users, with another 32% planning to offer one within 12 months. If these intentions come to pass, 75% will offer a self-service portal for WLA in 2019. To be successful in getting business user adoption, the benefits of a self-service portal must be marketed to business users directly. Twelve percent have discontinued their WLA self-service portal for lack of use.

SELF-SERVICE PORTAL FOR BUSINESS USERS

- No 12%
- Not used, discontinued 12%
- Yes 43%
- Planning within 12 months 32%

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RELEASE AUTOMATION

Release automation has been around for less than a decade, making it a much younger technology than workload automation. Release automation is one of the primary tools to support continuous delivery. These tools help coordinate and speed the process of application releases, and can include environment modeling, application artifact staging, and moving configuration and other data together with the application in an automated fashion in support of DevOps. Release automation is adopted by 59% of organizations and adoption is expected to grow above 20% annually for the next several years.

Release Automation 59% Adopted

APPLICATION RELEASE PERCENTAGE AUTOMATED BY INDUSTRY

Industry	Now	In 12 Months
Finance	14%	20%
Manufacturing	10%	14%
Telco	13%	19%
Retail	17%	22%
All Other	14%	19%

■ Now ■ In 12 Months

Currently, organizations are automating about 15% of the application release process, but like adoption, the amount of the release process that is automated is also expected to grow significantly in the next few years. Retail is currently the most automated for application release at 17%, followed by finance at 14%. As with many other automation metrics, manufacturing lags with just 10% of the application release process being automated. Application release automation is expected to increase to an average of 20% in the next 12 months.

HOW SATISFIED ARE YOU WITH YOUR ORGANIZATION'S CURRENT RELEASE AUTOMATION SOFTWARE REGARDING THE FOLLOWING ASPECTS?

Aspect	Score
Dependency Management	2.86
Extensible Plug-In Architecture	2.88
Role-Based Privilages	2.89
Analytics	2.94
Support for Automated Steps	2.96
Job Scheduling Integration	2.97
Database Management	3.01
Middleware and Cloud Provisioning	3.02
Release Dashboards	3.11
Scalability	3.14
Container Support	3.21
Automated Rollbacks	3.24
Agentless Architecture	3.24
Auditability	3.24
Artifact Staging	3.29

1 Not Satisfied 2 Slightly Satisfied 3 Average 4 Satisfied 5 Very Satisfied

As a much younger product category, satisfaction with release automation tools is generally lower than the satisfaction with workload automation. Satisfaction was measured on a five-point scale, where 5 is very satisfied. Satisfaction for a number of application release functions was measured, and 40% of the functions have a mean satisfaction below 3 – Average. Artifact staging scored the highest satisfaction with a mean of 3.29. Dependency management scored the lowest satisfaction, with a mean of 2.86. These products are well established and continue to mature and see improvements. EMA expects satisfaction will rise for these tools over the next several years as capabilities in the software increase and a greater percentage of the application release process is automated.

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CLOUD AUTOMATION

Deploying and operating a cloud environment manually is a time-consuming process with many steps including sizing, provisioning and configuring virtual machines (VMs), establishing clusters, load balancing, dealing with storage and networking, and then loading and running workloads. Once running, the environment must be monitored for performance, availability, and capacity. Cloud automation has been around almost 15 years—not as long as workload automation, but longer than release automation. There have been many applications born in the cloud and many workloads migrated to the cloud; however, adoption has been slower than first predicted and many workloads are still in legacy on-premises environments. As a result, adoption of cloud automation lags the much younger release automation category at 55%.

Cloud Automation 55% Adopted
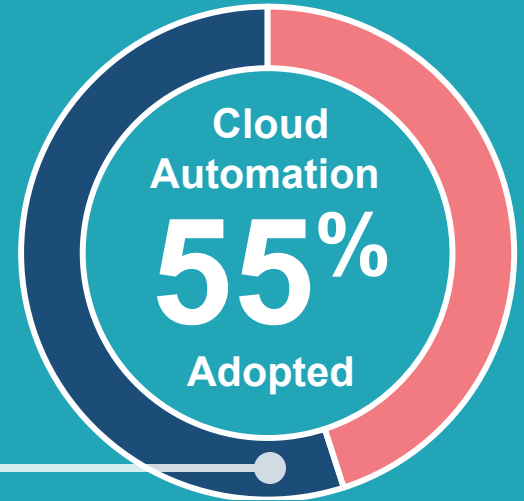
HOW SATISFIED ARE YOU WITH YOUR ORGANIZATION'S CURRENT CLOUD AUTOMATION SOFTWARE REGARDING THE FOLLOWING ASPECTS?

Aspect	Score
Manage Kubernetes	2.94
Establish infrastructure as code	2.95
Automate dependency mapping	2.95
Eliminate zombie cloud instances	2.99
Auto-provision virtual servers	3.00
Manage Docker containers	3.01
Manage migrations	3.03
Data protection	3.11
Support microservices architectures	3.11
Integrate DevOps processes	3.36
Provide version control for workflows	3.61
Cloud data center integration	3.64
Monitor performance	3.69

1 Not Satisfied
2 Slightly Satisfied
3 Average
4 Satisfied
5 Very Satisfied

Cloud automation has matured significantly over the past five years, and the maturity of these products is appropriate for their age. Satisfaction was measured on a five-point scale, where 5 is very satisfied. Satisfaction for a number of cloud configuration and orchestration functions was measured, and 33% of the functions have a mean satisfaction below 3 – Average. Monitoring performance has the highest satisfaction with mean of 3.69. Managing Kubernetes, a relatively new need, scored the lowest with a mean of 2.94. This is a dynamic product category that will continue to improve and mature.

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EMA PERSPECTIVE

The State of Enterprise Automation in 2018 is an IT industry in transition from legacy task-specific tools moving toward broad-based automation tools. These tools are becoming data-driven through machine learning and are becoming AI-enabled. Almost one-third of organizations are changing processes and data retention practices to empower machine learning. Automation maturity increases as company size increases. Large enterprises are leading the way, retiring homegrown tools and task-specific tools in favor of modern automation suites. Mid-sized organizations are not far behind, having far fewer homegrown tools to displace. Most smaller organizations lacked the resources or needs to develop homegrown tools and made limited use of task-specific tools. Overall, 66% say they are moving their automation efforts to broader automation tools; however, this jumps to 78% when looking just at CxO responses. Marketing, customer service, and financial close functions are the most automated business functions currently, yet most believe the biggest benefits to further automation lay in more automation for the financial close process. Where automation is working best, more is desired.

While much of the history of IT has been to automate manual tasks, IT has not been as focused on automating its own processes. IT operations and service desks are the most automated, having removed a number of highly redundant, high-volume tasks from human hands. Other areas like software development and data analytics are far less automated. The time for IT automation to take a back seat to business process automation has ended, however, as the pressures on organizations to move faster and digitally transform require agile software development and IT operations. Business executives understand that their IT counterparts need more automation to effectively support business needs. While some are waiting for their IT organization to increase automation before starting digital transformation, many are charging ahead, doing both IT automation and digital transformation simultaneously. Overall, 76% are moving ahead with digital transformation. A highly automated IT organization is a strategic differentiator and a powerful weapon against competitors. Workload automation and robotic process automation are recognized as top enablers of digital transformation by both business and IT folks. Yet IT folks also look to cloud automation, release automation, and customer support automation as key enablers. The software factory and the compute factory must be automated to deliver digital transformation for the business.

EMA PERSPECTIVE

Most organizations have numerous automation projects underway, with 74% of organizations looking for new use cases for automation. Business users' top needs for automation are adapting to rapid rate of change, driving new revenue opportunities, and reducing labor costs. IT lists reducing the cost of IT operations, freeing up strategic resources, and increasing speed and responsiveness as the top three needs for automation. This can be summed up as go fast, spend less, use key people effectively, and get more revenue. These are important aspirations for any organization. Getting automation right can be a strategic win, while doing it badly, too late, or not at all can be the beginning of the end of competitiveness for an organization. It really is this important. Those who understand the importance of getting automation right look to a new trend to oversee and implement automation in the form of an Automation Center of Excellence (COE). While only 7% have an established COE, 50% are planning to have a COE within 12 months. A COE is most often focused on business process automation, but more organizations are understanding the strategic importance of IT automation as well, and use a COE to plan and coordinate automation efforts across the entire business—including IT.

The history of IT is flush with big trends that sweep the industry and impose significant change with great benefits. The move from mainframe to distributed computing, client server and object-oriented programming, the focus on SLAs and service management, the internet, and the shift to cloud computing are among these. EMA believes the recent focus on automation enabling digital transformation is as significant a trend as any that has come before. Getting automation right will make or break many great companies. The tools they choose will have great impact on their success or failure. CA Technologies took the initiative to work with EMA to track the progress of automation, and the benchmarks established by this study are an important point of reference for future measures of automation progress.