Upskilling your people for the age of the machine

Why a workforce upskilling strategy is key to unleashing automation's productivity potential

Earlier this year, Tesla's Elon Musk admitted that an over-reliance on robotic automation and too few human workers is partly to blame for delays in manufacturing Tesla's Model 3 sedan.[1] *"Yes, excessive automation at Tesla was a mistake,"* he said. *"To be precise, my mistake. Humans are underrated. We had this crazy, complex network of conveyor belts. And it was not working, so we got rid of that whole thing."*

To capitalize on automation's potential, organizations need a balance. In particular, an effective balance between the technology dimension and the people dimension. This is less about the risk to jobs, and more about the impact of automation on skills and learning. André Richier, policy officer at European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, points out that automation can be less about job losses and more about the changing nature of a job.*"I believe that the loss of jobs owing to automation will be more limited than anticipated earlier,"* he explains. *"The bigger impact of automation will be on the very nature of jobs. In this sense, there will be hardly any area of work not impacted by automation. Therefore, organizations need to manage not just their digital transformation and the adoption of automation, but upskilling and transition of their workforce just as well."*

A number of institutions – businesses and government – have moved swiftly in this area:

- AT&T, the world's largest telecommunications company, has set itself a target of investing $1 billion to reskill nearly half of its workforce – 100,000 employees globally – for new jobs by 2020.[2]

- The Singaporean government is investing $1 billion annually until 2020 in initiatives such as student counselling, internships and mid-career learning; additionally, it has launched more than 100 professional conversion programs to help professionals prepare for new jobs.[3]

- Boeing recently announced investments of $300 million, including $100 million for workforce development, in the form of training, education, and other capabilities development to meet the scale needed for rapidly evolving technologies and expanding markets. The company has also earmarked another $100 million for "workplace of the future" facilities and infrastructure enhancements for Boeing employees.[4]

To assess how organizations are progressing with the upskilling of their workforces, we surveyed 800 senior executives (director-level or above) and 1,200 employees in supervisory and non-supervisory roles (see Research Methodology at the end of the report for details). All senior executives represented in our survey are either leading an automation initiative or actively participating in one. We also conducted one-to-one interviews with a range of senior executives and academics.

In this report, our analysis looks at three main areas:

1. **Why upskilling is key to harnessing automation's productivity potential**

2. **Employees' and leaders' perceptions of current upskilling initiatives**

3. **How organizations can build a successful upskilling strategy.**

"

"The bigger impact of automation will be on the very nature of jobs. In this sense, there will be hardly any area of work not impacted by automation. Therefore, organizations need to manage not just their digital transformation and the adoption of automation, but upskilling and transition of their workforce just as well."
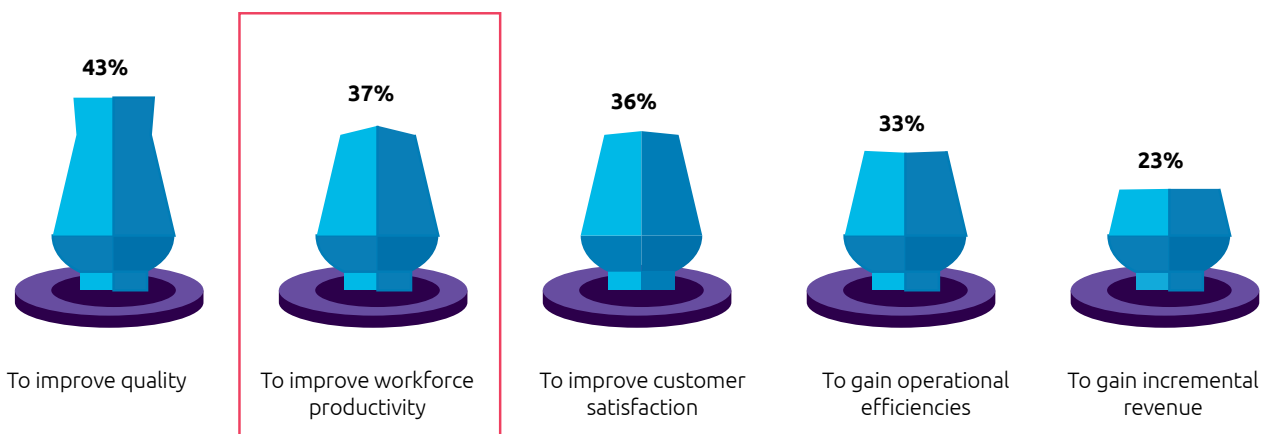
Upskilling helps automation drive greater workforce productivity

The current wave of automation is not yet meeting organizations' desired goals of increased productivity

Previous research we undertook on automation use cases showed that improving workforce productivity is one of the primary objectives of automation initiatives (see Figure 1).[5]

Figure 1. Main objectives behind automation initiatives

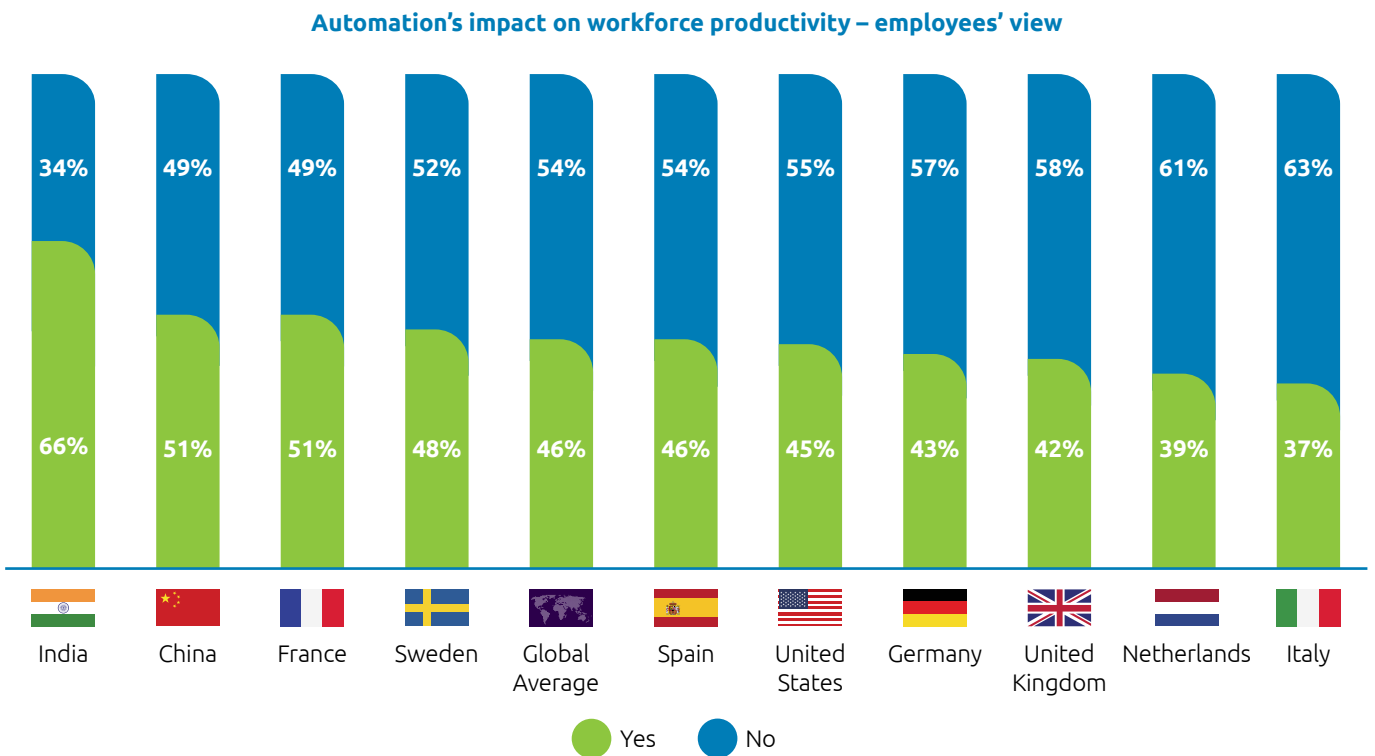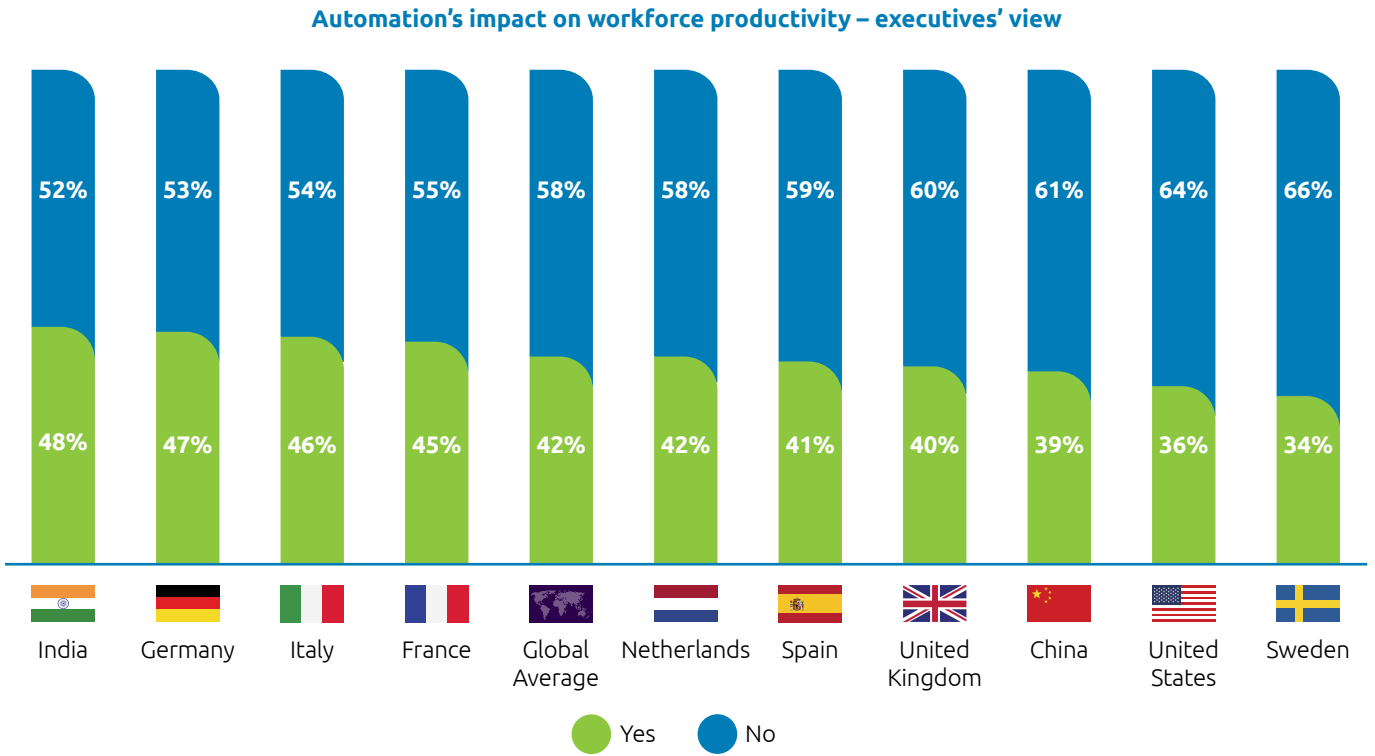| 43%	37%	36%	33%	23%
To improve quality	To improve workforce productivity	To improve customer satisfaction	To gain operational efficiencies	To gain incremental revenue

Source: Capgemini Research Institute, Automation Use Case Survey; July 2018, N=705 organizations
*Top two objectives behind launching automation initiatives ranked.

However, as Figure 2 shows, a majority of HR and general management executives do not feel that their automation initiatives have helped increase workforce productivity. These organizations might still derive some productivity improvement thanks to automation, but this is clearly not meeting executives' expectations. Employees share this view. Except for India, China, and France, most employees do not think that automation has helped them to improve their productivity.

According to research by Professor Daron Acemoglu (MIT Department of Economics) and Pascual Restrepo (Boston University), a gap between new technology adoption and the skills to use those technologies is likely to result in diminished productivity gain and inefficiencies.[6] This is potentially a scenario that is playing out in automation. The lack of at-scale deployments could also explain this perception (see our research on automation use cases).[7]

Figure 2. Automation's impact on workforce productivity – has automation improved employees' productivity?

Automation's impact on workforce productivity – executives' view

	India	Germany	Italy	France	Global Average	Netherlands	Spain	United Kingdom	China	United States	Sweden
No	52%	53%	54%	55%	58%	58%	59%	60%	61%	64%	66%
Yes	48%	47%	46%	45%	42%	42%	41%	40%	39%	36%	34%

● Yes ● No

Automation's impact on workforce productivity – employees' view

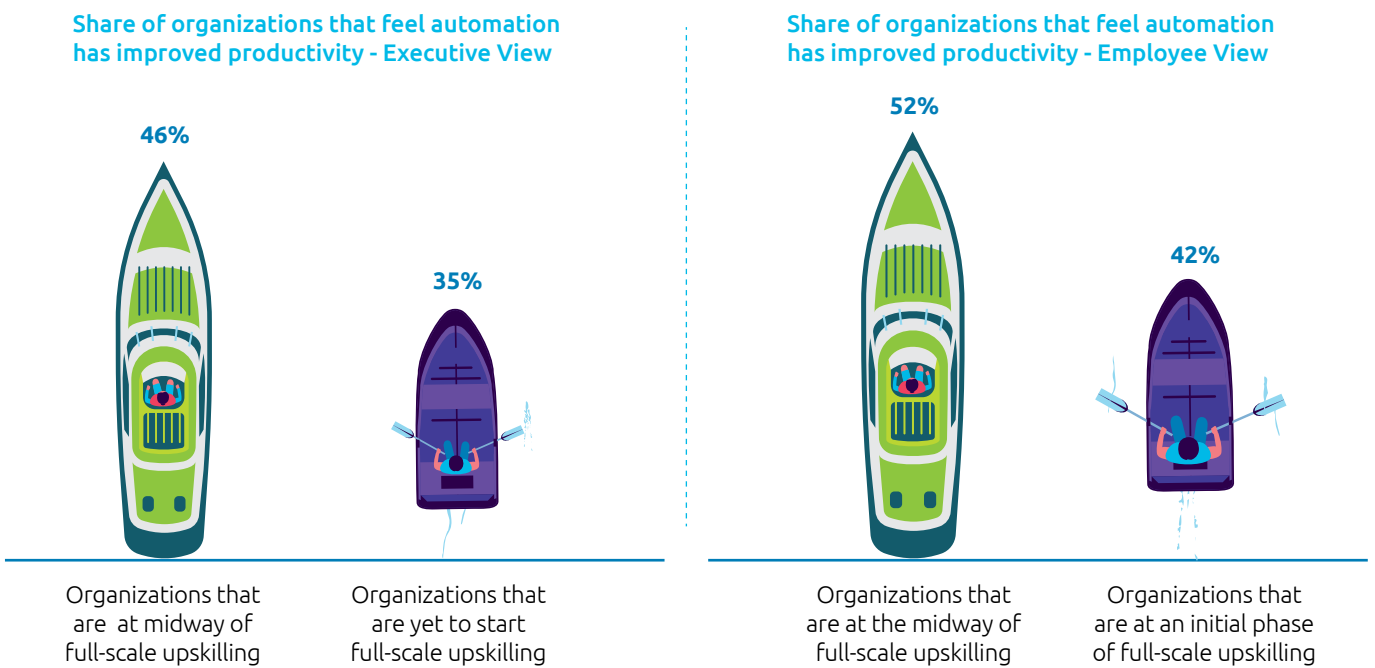|	India	China	France	Sweden	Global Average	Spain	United States	Germany	United Kingdom	Netherlands	Italy
No	34%	49%	49%	52%	54%	54%	55%	57%	58%	61%	63%
Yes	66%	51%	51%	48%	46%	46%	45%	43%	42%	39%	37%

● Yes ● No

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, For employees N=1,200, for senior executives N=418 (senior executives in charge of adapting their workforce to automation).

## Upskilling is helping fulfill automation's productivity potential

Upskilling holds the key to unlocking unrealized productivity. We segmented the organizations responding to our survey by those who are advanced in their upskilling programs versus those who are only at the beginning of their efforts.

Among organizations that use a lot of automated processes,[8] those with full-scale upskilling programs report higher levels of productivity. And, for those that are advanced in upskilling, 46% of executives say productivity has improved, but this drops to 35% where upskilling is in its infancy (see Figure 3). A similar picture emerges when you look at employees' views.

Figure 3. Among organizations with high automation maturity, those with a full-scale upskilling initiative report higher levels of workforce productivity

Share of organizations that feel automation has improved productivity - Executive View

46%

35%

Organizations that are at midway of full-scale upskilling

Organizations that are yet to start full-scale upskilling

Share of organizations that feel automation has improved productivity - Employee View

52%

42%

Organizations that are at the midway of full-scale upskilling

Organizations that are at an initial phase of full-scale upskilling

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018; For executive view, N for organizations at the midway of full-scale upskilling program=24, N for organizations yet to start full-scale run=57; For employee view, N for organizations at the midway of full-scale upskilling program=21, N for organizations yet to start full-scale run=165. Percentages represent the share of executives and employees who feel that automation initiatives had a positive impact on their workforce productivity.
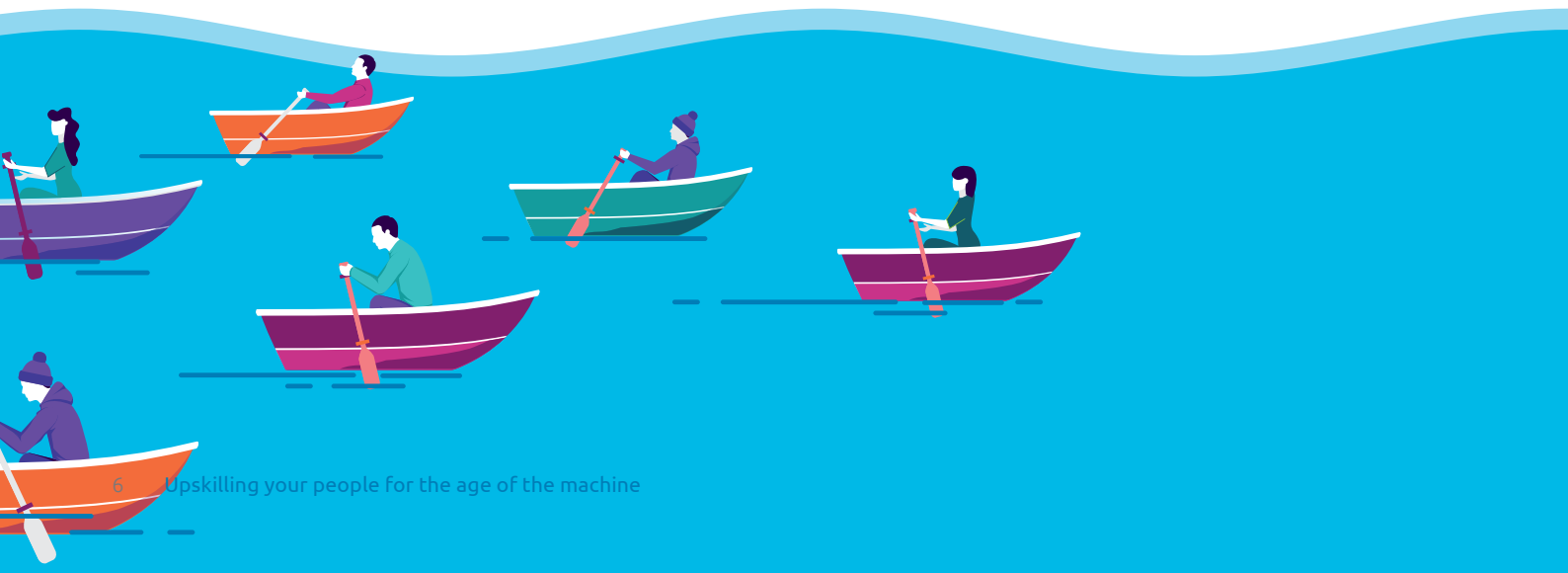
What might explain the additional productivity boost from upskilling? Employees who benefit from upskilling are able to better leverage automation tools but more importantly move to more value-added activities, thus driving more output for the organization. As automation reduces manual and routine tasks, employees will reorganize remaining tasks and will have more time on hand to perform value-added activities. Recent research from MIT and Carnegie Mellon University shows that the impact of machine learning will occur on a task-by-task basis rather than fully taking over jobs.[9] *"Tasks within jobs typically show considerable variability in 'suitability for machine learning' while few -- if any – jobs can be fully automated using machine learning,"* researchers say. *"Machine learning technology can transform many jobs in the economy, but full automation will be less significant than the re-engineering of processes and the reorganization of tasks."* But this move towards more value-added activities will only be possible through upskilling. *"Automation has led to a significant alteration of jobs in forklift driving, parts assembly and packaging. We have upskilled and cross-skilled workers in these areas which previously required manual labor to higher-value jobs. By training them how to seamlessly operate and maintain the machines that automate repetitive tasks, they now add more value by doing quality checks and supervision."* says a global operations director at a large, parts manufacturer. *"This really helped our people witness enhancements in quality and production, while keeping cost in check without reducing staff."*

Another reason for the additional productivity boost from upskilling could be that organizations with advanced upskilling initiatives have earnt employees' trust that their jobs are secure in the long term. As a result, employees more fully embrace automation compared to their peers in other organizations where upskilling is absent. This leads to greater productivity from automation tools and processes.

What is upskilling?

In this report, we refer to upskilling initiatives as large-scale programs designed to train and develop a workforce to deal with automation-driven change. These programs prepare the workforce by helping them to:

- Learn new skills or technologies within a similar job, including:
  – Skills necessary to leverage automation effectively to complement the non-automated part of a job, and,
  – Skills useful to perform higher value tasks in the time freed-up by automation
- Redefine or complement skills to shift to new types of jobs (side-skilling / job migration)

- Complement existing skills with new ones to be able to perform several jobs (multi-skilling).

The way this training is delivered can vary from traditional to non-traditional, such as classroom-based training versus massive open online courses.

AT&T's large-scale program to upskill over 100,000 of its workers by 2020 illustrates how organizations can use a range of tactics. It offers offline as well as online courses in partnership with leading universities and educational startups such as Coursera and Udacity.[10] In addition, it offers employees a portal called "Career Intelligence" that allows workers to visualize available job options, the skills required, potential salaries, and whether the options are projected to grow or shrink in the future. This helps workers make fact-based decisions to take up training and effectively plan their transition to new roles.

"AT&T's large-scale program to upskill over 100,000 of its workers by 2020 offers employees access to a portal called "Career Intelligence" to make fact-based decisions regarding upskilling by allowing them to visualize available job options and skills required in them"

A compelling business case for upskilling

Our analysis shows that upskilling in tandem with automation has a strong potential upside:

- We assessed organizations with high automation maturity as well as advanced upskilling programs versus those with the same level of automation maturity but where upskilling is absent.
- This analysis shows that the former set of organizations can expect to save more than $270 million dollars more over three years than the other segment, where automation is advanced but upskilling is not.
- This is due to the greater productivity of employees in the first segment. Overall, organizations that are advanced in both automation and upskilling could save up to 400 million dollars per year, which represents about 3 to 4% of revenues for a bank with c. 50,000 employees or close to 6% of revenues for a retailer with the same number of employees. These numbers represent the potential benefits for at-scale deployments.
- While organizations that are not upskilling their workforce are driving value, they are not seeing the returns of those from the first advanced segment. More than two in five of these organizations (41%) – the largest share – are only able to save up to 2.5 hours per week on average using automation. This might explain why a majority of executives and employees feel that automation is not improving workforce productivity.

Table 1. Upskilling can help a 50,000-strong organization save US $278 million over three years

	Organizations with high automation maturity that are midway in their upskilling program	**Organizations with high automation maturity that are at initial stages in their upskilling program**
A. Per employee and manager, hours freed up per week by automating manual/repetitive/hazardous jobs	4.4 hrs	3.2 hrs
B. Hours saved annually per employee and manager (A x 44 weeks per year)	193.6 hrs	140.8 hrs
C. Hourly employment cost in US for employee	US$36.22	US$36.22
D. Compunded Annual Growth Rate (CAGR) of hourly employment cost in US per employee for an average US company	2.70%	2.70%
E. Per employee, reduced cost over three years (From B, C, and D)	**US$21,610**	**US$15,716**
F. Hourly employment cost in US for managers	US$70.19	US$70.19
G. CAGR of hourly employment cost in US for managers	3.20%	3.20%
H. Per manager, reduced cost over 3 years (From B, F, and G)	**US$42,085**	**US$30,607**
I. Spread between employee and managers	Manager: Employees: 1:5	Manager: Employees: 1:5
J. Total reduced cost over three years for a large organization with 50,000 employees (From E, H, and I)	**US$1,251 million**	**US$910 million**
K. Amount spent in skilling the employees (Cost of training per employee: US$1,273)	US$63.65 million	NA
L. Total gain over three years (D-E)	**US$ 1,188 million**	**US$910 million**
M. Incremental gain over three years	**US$278 million**	

Source: Capgemini Research Institute Analysis.
A: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018
B: OECD (2018), "Hours Worked: Average annual hours actually worked", OECD Employment and Labour Market Statistics (database), https://doi.org/10.1787/data-00303-en (accessed on 22 October 2018); Average annual hours actually worked per worker = 1,759. Assuming an average of 40 hours worked per week, total weeks worked per year comes to = 1,759/40 = 44.
C, D, F, G: Bureau of Labor statistics website's cost of employment, accessed in October 2018.
I: Harvard Business Review, "Excess Management Is Costing the U.S. $3 Trillion Per Year", September 2016.
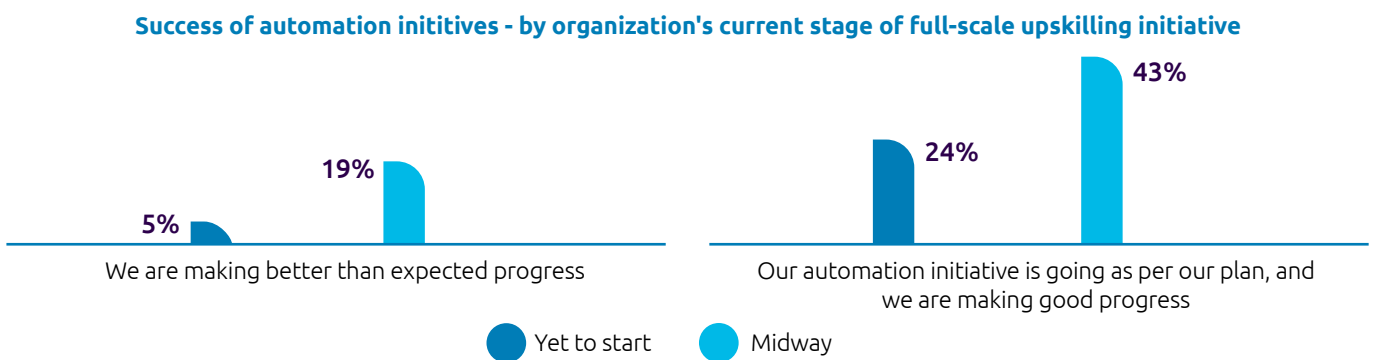K: Association for Talent Development, "2017-state-of-the-industry", December 2017.
M. Equivalent to 2.6% of annual revenues of a large US bank with nearly 52,000 employees

Organizations with established upskilling initiatives report greater success with automation

Our research also reveals that automation initiatives are more successful when full-scale upskilling is underway (see Figure 4).

Figure 4. Organizations with full-scale upskilling initiatives underway report greater success with automation

Success of automation inititives - by organization's current stage of full-scale upskilling initiative

We are making better than expected progress: 5% (Yet to start), 19% (Midway)

Our automation initiative is going as per our plan, and we are making good progress: 24% (Yet to start), 43% (Midway)

● Yet to start   ● Midway

Source: Capgemini Research Institute, Automation and the Workforce survey, July– September 2018, N =72 for midway of full-scale upskilling; N=344 for yet to start full-scale upskilling. The percentage represents the share of senior executives who rate the success of their automation initiatives between 5 and 7 on a 7-point scale.

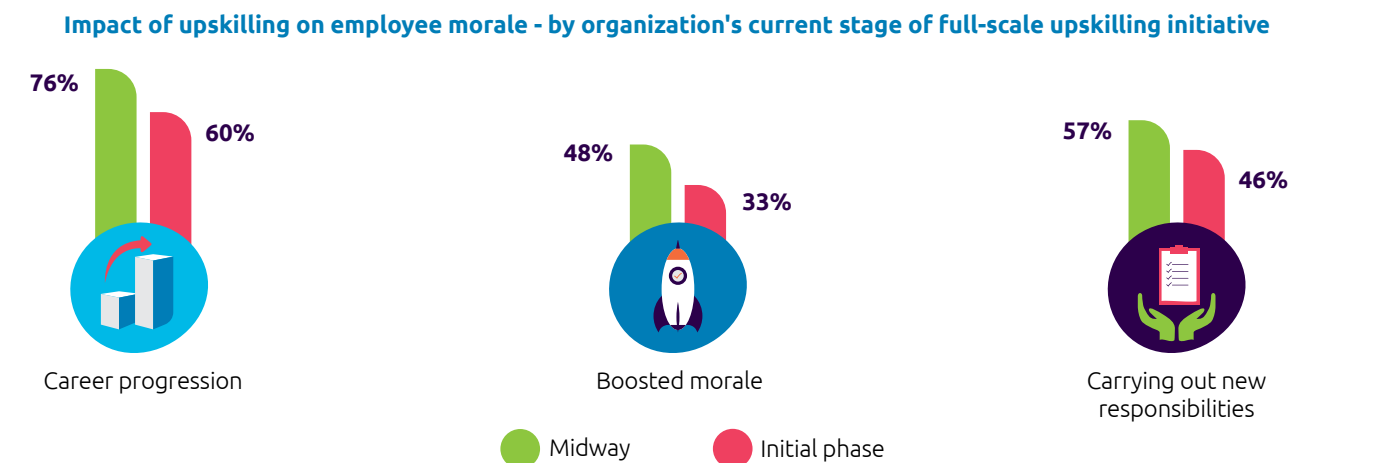## Upskilling boosts employee morale

In addition to productivity gains, advanced organizations also see an uptick in employee morale. Our survey shows that employees in organizations where upskilling is advanced feel more positive about three key aspects of employment:

- Career progression
- Boosted morale, and

- Carrying out new responsibilities (see Figure 5).

Additionally, 90% of organizations with advanced upskilling say that their workforce is supportive of the organization's automation initiatives. But for those at a less advanced stage of upskilling, this drops to 64%.

Figure 5. Upskilling boosts employee morale

Impact of upskilling on employee morale - by organization's current stage of full-scale upskilling initiative

Career progression: 76% (Midway), 60% (Initial phase)

Boosted morale: 48% (Midway), 33% (Initial phase)

Carrying out new responsibilities: 57% (Midway), 46% (Initial phase)

● Midway   ● Initial phase

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018; Percentages indicate share of employees at each organization group who believe they have benefited from upskilling program in a certain way.
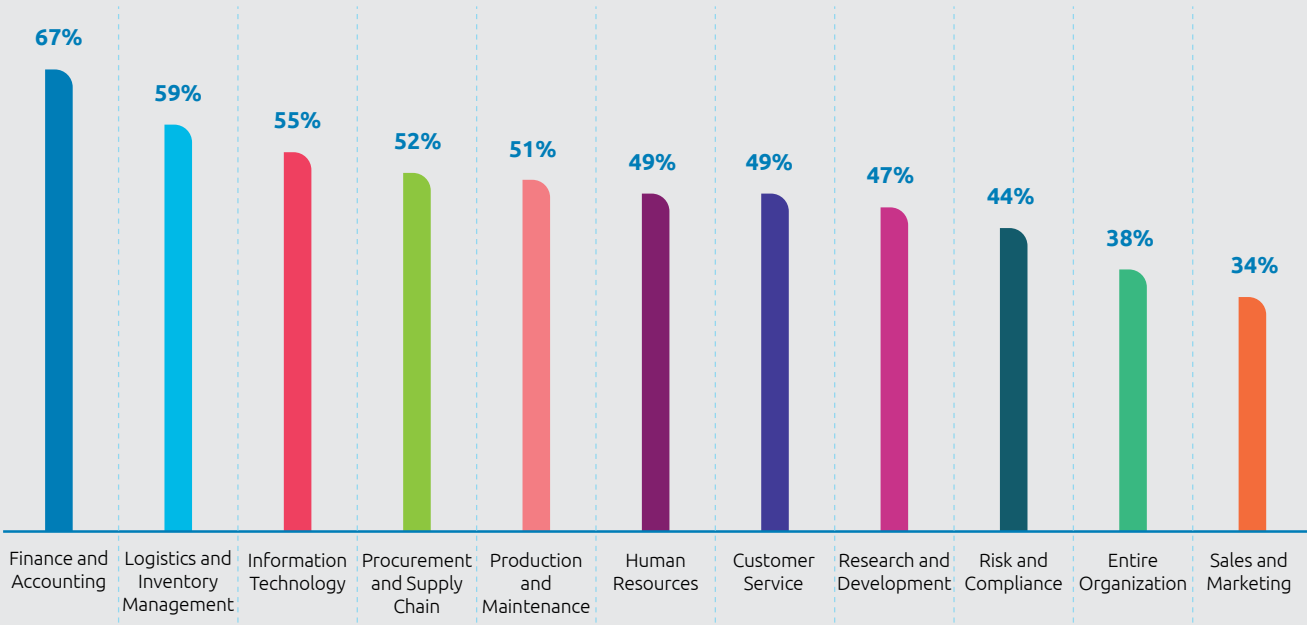
The impact of automation on jobs and organizations' response

There is no shortage of studies estimating and quantifying the macro-economic impact that automation will have on jobs.[11] In this report, we chose to focus on how organizations are responding to automation for their workforce and the crucial role played by upskilling. A macro-economic discussion was not a part of the scope of this research.

The current wave of automation is drastically changing jobs across business functions

As Figure 6 shows, a majority of HR executives believe that jobs in finance, logistics, IT, procurement and production have changed drastically due to automation.

Figure 6. Senior HR executives say that many roles have already experienced "significant change" as a result of automation

Finance and Accounting	Logistics and Inventory Management	Information Technology	Procurement and Supply Chain	Production and Maintenance	Human Resources	Customer Service	Research and Development	Risk and Compliance	Entire Organization	Sales and Marketing
67%	59%	55%	52%	51%	49%	49%	47%	44%	38%	34%

Source: Capgemini Research Institute, Automation and the Workforce survey, July – September 2018, N=418 (senior executives in charge of adapting their workforce to automation). The percentage represents the share of senior executives who feel the jobs in the corresponding business functions have significantly changed.
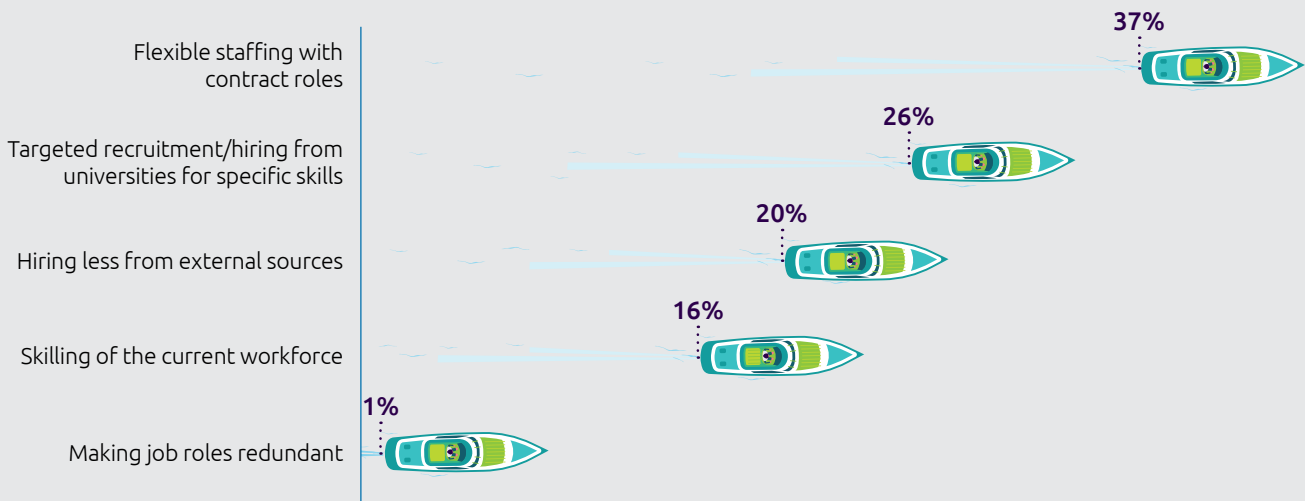
However, our research suggests that this change is unlikely to result in massive redundancies. Eberhard Schroder, director HR Operations Management at ZF Friedrichshafen – a German car parts manufacturer, said, *"Our organization's main focus is to retain and skill the workforce which is already on board and not make them redundant owing to automation. We very much value the internal knowledge and network that people build working with the company for years."* Our research seems to confirm this perspective: many organizations we surveyed said they would focus on flexible staffing rather than redundancies. As Figure 7 shows, just 1% said their primary response to automation will be making jobs

redundant, whereas 37% organizations will rely more on flexible staff. Walmart recently revealed its plans to rely more on a flexible, external workforce – crowdsourced or outsourced – to handle tasks such as package delivery and assembly.[12] Walmart expects to diminish jobs mostly via attrition and to offer jobs that pay more, for instance, customer service. Research has established that as automation has gained ground in the last couple of decades, the share of workers in the US who are engaged in alternative work – from temporary agency workers to independent contractors – rose from 10.7% in 2005 to 15.8% in 2015.[13] This trend is expected to continue as automation levels rise.

Figure 7. Organizations' primary response to the impact of automation on the workforce

Response	Percentage
Flexible staffing with contract roles	37%
Targeted recruitment/hiring from universities for specific skills	26%
Hiring less from external sources	20%
Skilling of the current workforce	16%
Making job roles redundant	1%

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N=418 (senior executives in charge of adapting their workforce to automation).

Are organizations taking upskilling seriously enough?

Despite the urgent need for action, few organizations have a mature upskilling initiative today

As automation adoption continues to change job roles and demand for new skills, companies face an urgent need to upskill their workforce. A recent report by the World Economic Forum found that – on average – only 58% of the skills required to currently perform a job will remain the same over 2018–22.[14] Further, as Figure 7 showed, only 16% organizations plan to upskill their current workforce as a primary response to the impact of automation.
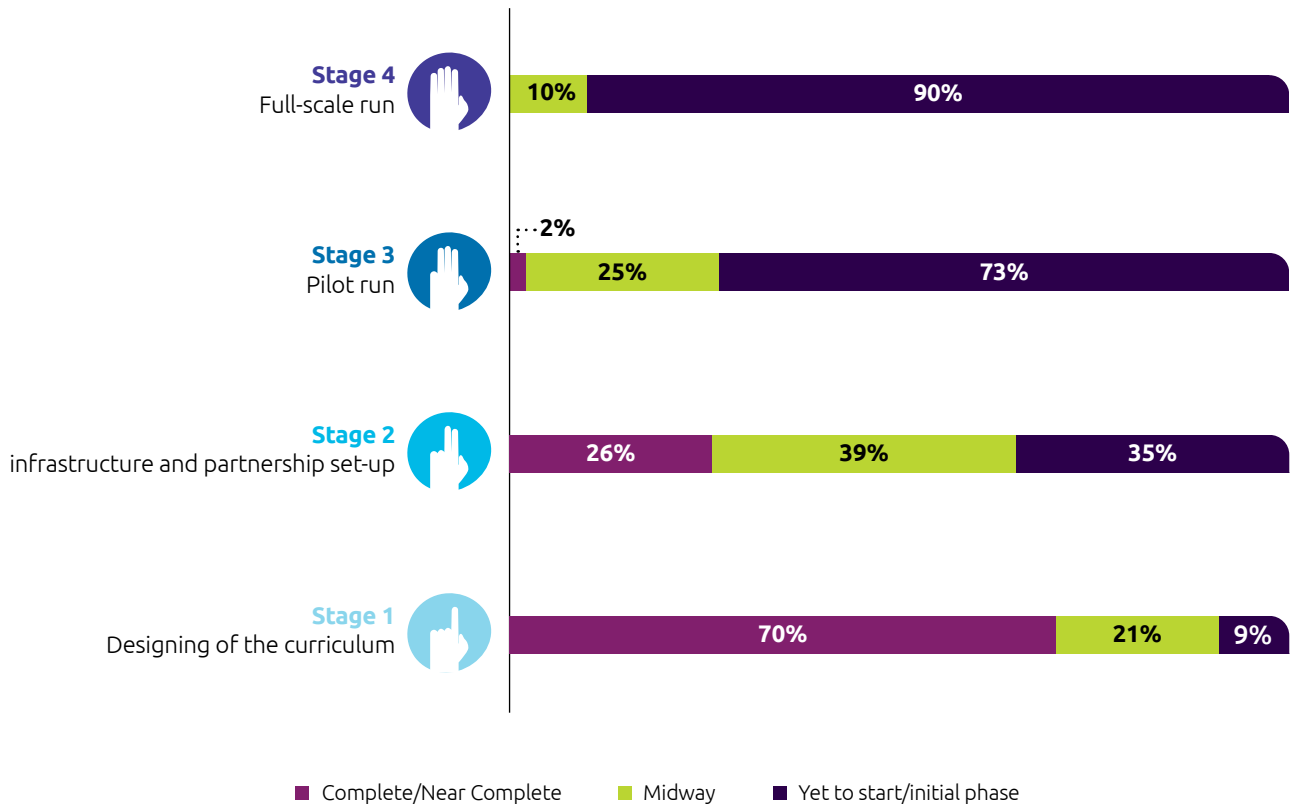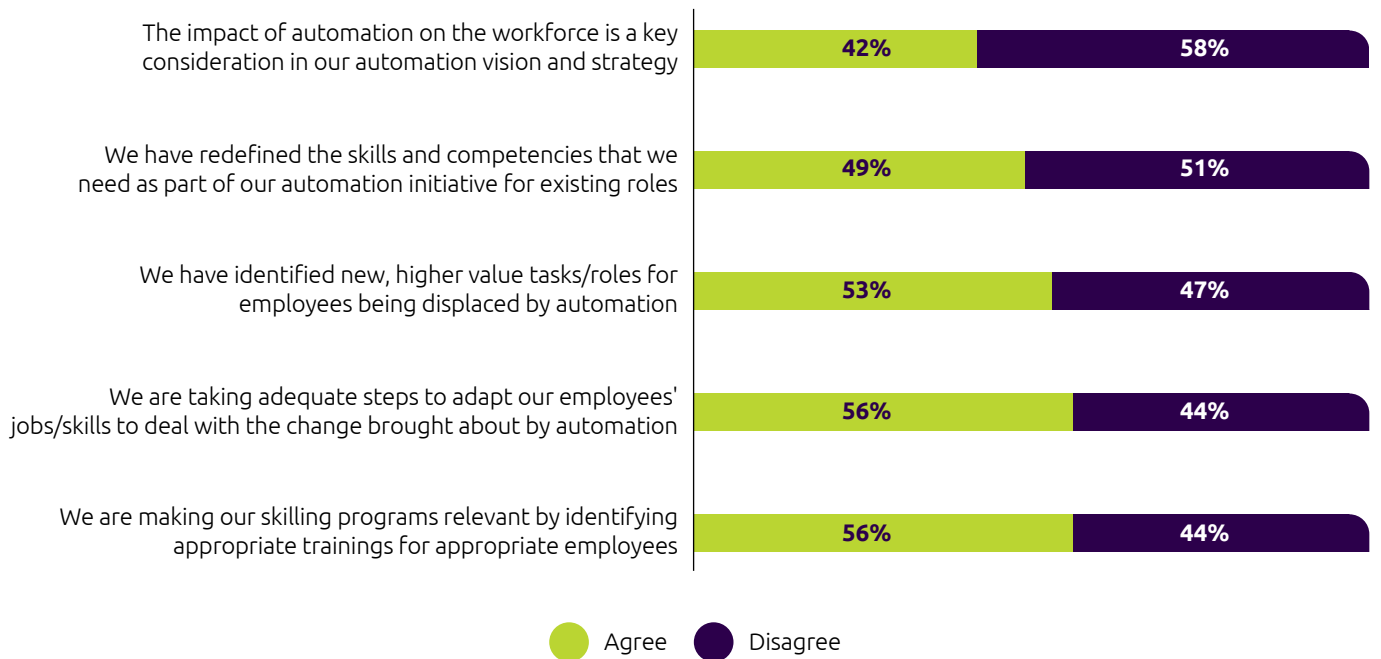
To assess companies' responses in terms of upskilling, we assessed how they were performing along four key stages:

1. Design of the curriculum
2. Infrastructure and partnership set-up
3. Pilot run
4. Full-scale run.

We found significant weaknesses in key elements of the journey. For example, as Figure 8 shows, in stage 3, close to three-quarters (73%) have not begun their upskilling pilot.

Figure 8. Status of organizations' upskilling initiatives for automation

Stage 4
Full-scale run
10% | 90%

Stage 3
Pilot run
2% | 25% | 73%

Stage 2
infrastructure and partnership set-up
26% | 39% | 35%

Stage 1
Designing of the curriculum
70% | 21% | 9%

■ Complete/Near Complete   ■ Midway   ■ Yet to start/initial phase

Three in four (73%) organizations have yet to execute a pilot run of their upskilling initiative to adapt the workforce to automation

For most organizations, the impact of automation on the workforce is an afterthought

As Figure 9 shows, almost 60% of HR and general management executives admit that the impact of automation on the workforce is not a key consideration in their leadership's automation vision and strategy. Additionally, nearly half of HR and general management executives (53%) believe that they are yet to identify higher value tasks for displaced employees, take adequate steps to adapt employees' jobs to changes brought by automation, or make training programs relevant.

In the UK, John Lewis and Waitrose supermarkets – part of the John Lewis partnership – prioritize equipping their people for an automated and digitized future. *"It has never been an acceptable outcome for us to simply displace human labor in favor of technology,"* says Andrew Murphy, CIO, John Lewis Partnership, *"Our strategy has been to not just save money, but also to follow a sustainable employment model in the face of the inevitability of significant digitalization of the workplace. It's a journey that we navigate together with the workforce via upskilling, people movements, continuous interaction between senior leaders and the workforce."*

Figure 9. One in two organizations' automation strategy does not take the impact of automation on the workforce into account

	Agree	Disagree
The impact of automation on the workforce is a key consideration in our automation vision and strategy	42%	58%
We have redefined the skills and competencies that we need as part of our automation initiative for existing roles	49%	51%
We have identified new, higher value tasks/roles for employees being displaced by automation	53%	47%
We are taking adequate steps to adapt our employees' jobs/skills to deal with the change brought about by automation	56%	44%
We are making our skilling programs relevant by identifying appropriate trainings for appropriate employees	56%	44%

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N=418 (senior executives in charge of adapting their workforce to automation).

Leadership's communication and grasp of employee concerns is limited

Senior leaders are not communicating frequently with their employees on automation initiatives, upskilling plans and emerging roles. As Figure 10 shows, fewer than half of senior executives (45%) communicate with their workforce on organizations' automation initiatives, their importance, and potential impact on workforce.

The share drops to 15% for those communicating on upskilling initiatives, while only 2% communicate on upcoming roles and shifting job families. Communication is a crucial component of workforce transition and change management. The lack of it has usually serious repercussions on employee morale, job satisfaction and retention.

"I believe that change management in adapting the workforce to automation plays at least half the

role in making a success of an automation strategy," says ZF Friedrichshafen's Eberhard Schroder, *"And communication is a key pillar that change management rests on. Leaders have to come out and communicate from an organization perspective: what are we doing, why are we doing it, and to what extent?"*

Figure 10. Percentage of organizations where leaders frequently interact with the workforce on automation and its impact

45%

15%

2%

Organization's automation initiatives, their importance and potential impact on the workforce

Organization's initiatives for skilling employees

Upcoming and shifting roles and job families owing to automation

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N=418 (senior executives in charge of adapting their workforce to automation).

Additionally, leaders seem to be oblivious to how employees feel about automation. Whereas 69% of senior executives say employees are well informed about automation, only 31% of associate-level employees feel that to be the case (see Figure 11).

Figure 11. Stakeholders' perceptions about how informed employees are about automation

69%

31%

44%

Share of senior executives who feel employees are well informed

Share of associate level employees who feel they are well informed

Share of senior associate level employees who feel they are well informed

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018; For associate-level employees N=392, for senior associate-level employees N=448, for senior executives N=418.

Our earlier research on digital culture in organizations uncovered a similar disconnect between leaders and the workforce. It found 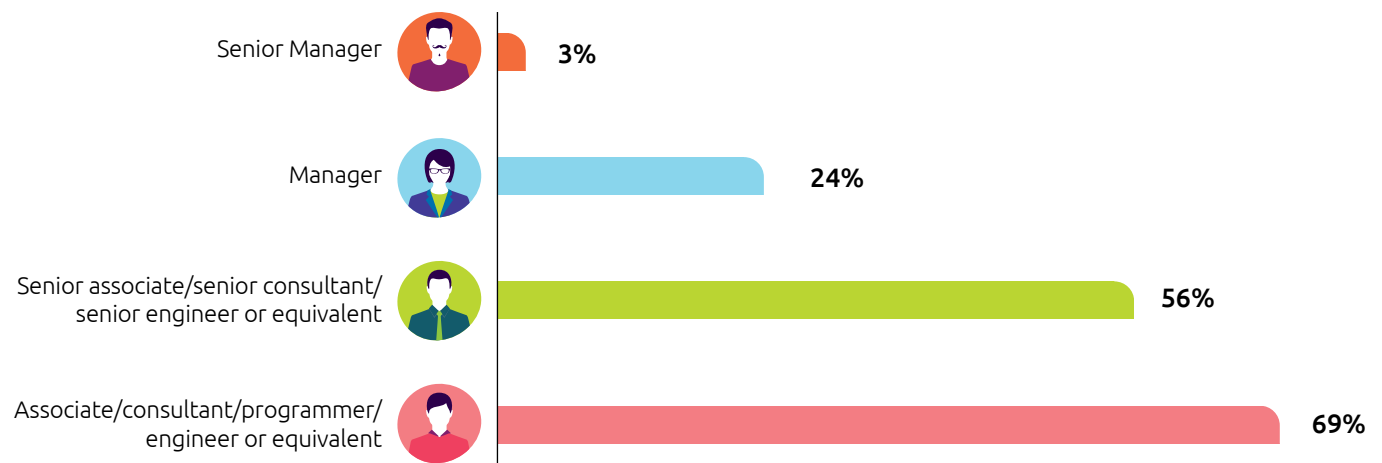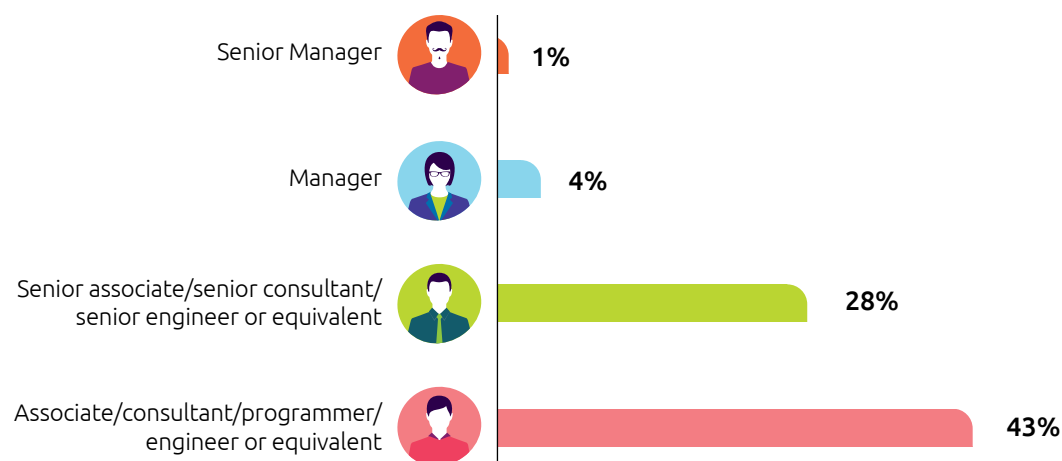that while 61% of leaders believed that the digital strategy and vision are well communicated to the whole organization, only 38% of employees believed so.[15]

The workforce at junior level is uninformed and confused about automation initiatives

As Figure 12 shows, over two-thirds (69%) of junior employees say they are not well-informed about their organization's automation initiatives. Even those employees a grade above feel they lack information – 56% of senior associate-level employees feel ill-informed as well. It seems that many organizations are either not communicating about automation with less senior employees or are communicating ineffectively – via less effective channels, or with insufficient frequency and intensity.

Figure 12. Share of employees not well informed about their organization's automation and upskilling initiatives – by grade

Senior Manager	3%
Manager	24%
Senior associate/senior consultant/senior engineer or equivalent	56%
Associate/consultant/programmer/engineer or equivalent	69%

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018; For associate-level employees N=392, for senior associate-level employees N=448, for manager-level employees N=246, for senior manager-level employees N=114.

This lack of information is leaving employees confused about their future. As Figure 13 shows, 43% of junior-level employees are either confused or afraid about automation initiatives at their organization. This confusion reduces as people get more senior, but it poses a big threat to junior-level productivity and retention.

Figure 13. Share of employees who are confused by or afraid of automation – by grade

Senior Manager	1%
Manager	4%
Senior associate/senior consultant/senior engineer or equivalent	28%
Associate/consultant/programmer/engineer or equivalent	43%

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018; For associate-level employees N=392, for senior associate-level employees N=448, for manager-level employees N=246, for senior manager-level employees N=114.

How to design and implement a successful upskilling strategy?

From our discussions with senior HR and management executives, and our own experience in devising and implementing people strategies, we know how important it is that organizations take a tailored approach to the automation question. And, it needs to begin by making upskilling a key part of your automation strategy. As

we have already seen – this is something that 58% of organizations are failing to do, and we have also seen that upskilling does not even feature in organizations' main tactics for ensuring their people adapt to automation. There are five areas that are critical (see Figure 14).

Figure 14. Key considerations in designing and implementing a successful upskilling strategy

Assess your tech investments and extent of impact on the workforce

Enable leaders to communicate effectively and manage change

Define the skills you need and when you need them

Align learning to organizational strategy

Make upskilling a win-win for people and the organization

Upskilling your workforce

Source: Capgemini Research Institute Analysis.

> *For 58% of organizations, the impact of automation on the workforce is not a key consideration in their automation vision and strategy*

I. Assess your technology investments and the extent of their impact on the workforce

Analyzing the impact of automation on people is a key consideration that many organizations struggle with, but it is an important first step. *"The first step in building a strategy for dealing with automation must be to find out who will be impacted in a broad sense of the word,"* says ZF Friedrichshafen's Eberhard Schroder. *"The impact need not always be a redundancy, it can also be a dramatic shift in the nature of the job. It is next to impossible to chart a clear path if you don't know where you need your workforce to be in the future."*

Many organizations over-emphasize on the presence of a business case to embark on an upskilling program. In our experience, a common issue is that organizations get very caught up with establishing a quantified business case for the upskilling program, which can delay them from getting started. As we saw earlier, the productivity upside from upskilling is clear, with a significant value upside for those who combine automation with upskilling.

Understanding the impact of automation is complex and can be a stretch for organizations' existing workforce planning methods and tools. We suggest the following considerations as a starting point:

1. How will our technology strategy and investments change job families and in which parts of the organization?
2. What is the time horizon for this change? Which job families are affected immediately?
3. How many job families will be created in the future?
4. What share of the workforce needs to be upskilled and how?

Understanding future scenarios is critical and some organizations are tackling the issue of impact assessment with predictive analytics. For instance, Faethm, a Capgemini partner, has a platform that uses analytics to predict the impact of emerging technology on jobs and the workforce.[16]

Organizations can use insight from tools like these to map out a range of areas, such as:

- Impact and timelines for change based on prioritized technology investments
- Distance of job families from the end state and therefore potential transition paths for highly affected job families
- Where upskilling investment needs to be prioritized.

II. Define the skills you need and when you need them

Once this impact has been visualized, organizations must devise an upskilling strategy at three levels, depending on the organization's long-term vision and the skills required to fulfill it. This is based on a range of skill clusters.

1. Those core skills that underpin the organization's core competencies and long-term strategy, including core skills that exist today as well as core skills that will be required in the future to execute on the long-term plans
2. Those skills that are required for non-core tasks, but where the skill may become more essential and core in the future
3. Those people with skills for handling non-core tasks that are likely to remain non-core.

The people that fall into clusters 1 and 2 need a strategic approach to upskilling. Cluster 2, in particular, needs a long-term outlook – ascertaining those skills that are non-core today but might become crucial in the long run.
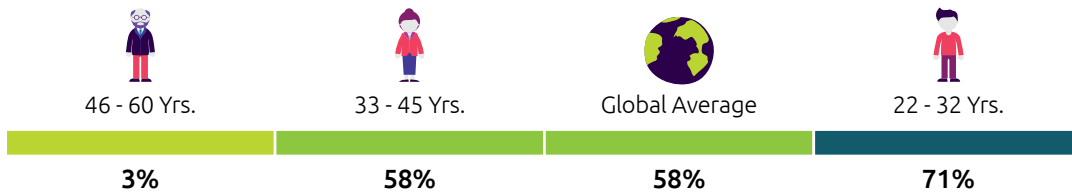
For cluster 3, employing a flexible workforce with contract roles would be one approach. However, organizations need to be aware that an over-reliance on a flexible workforce can stunt knowledge and skills development and leave the organization without a skilled talent pool. Business leaders, particularly CHROs and COOs, need to ensure the organization takes a sustainable approach.

The impact of automation is going to be more profound on some demographics than others (see Figure 15). For instance, employees at a junior level, as well those that are younger and have fewer educational qualifications, are at a greater risk from automation. As these entry-level jobs vanish, organizations must consider the impact it will have on onboarding and building a talent pool within the enterprise. How will organizations attract young talent? How will organizations build knowledge and experience in their workforce?
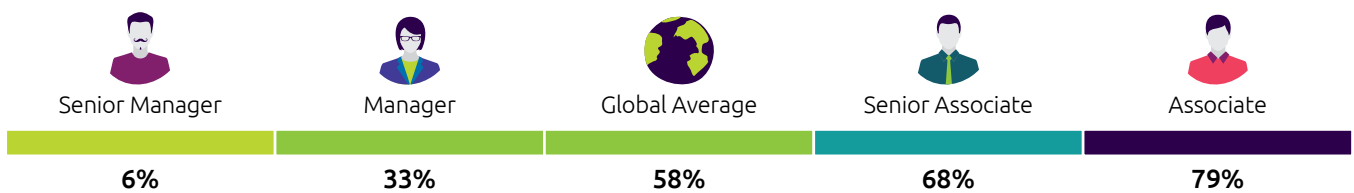
To better estimate the skills that will be needed in future, a recent study by the World Economic Forum presented a tool to identify potential pathways for jobs that are likely to be affected by technological change in the medium term in terms of their viability and desirability. For instance, the study suggests that office clerks can evolve into municipal clerks and first-line supervisors of administrative workers.[17] Cooks and fast-food workers can find new, future jobs as dining-room attendants, and computer programmers might consider evolving their role as web developers and information systems managers.

Figure 15. Profile of the employees who feel that their jobs are going to be impacted in next five years
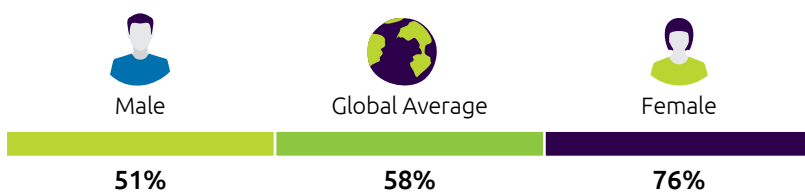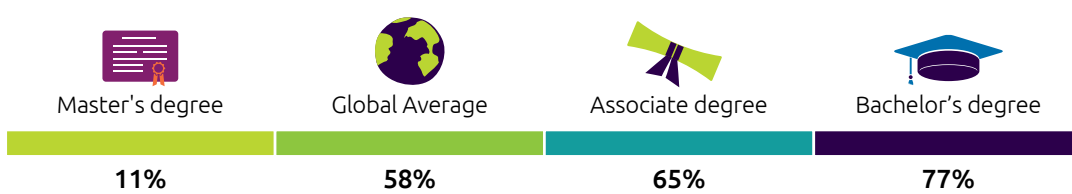
Age group:

46 - 60 Yrs.	33 - 45 Yrs.	Global Average	22 - 32 Yrs.
3%	**58%**	**58%**	**71%**

Grades:

Senior Manager	Manager	Global Average	Senior Associate	Associate
6%	**33%**	**58%**	**68%**	**79%**

Gender:

Male	Global Average	Female
51%	**58%**	**76%**

Qualification:

Master's degree	Global Average	Associate degree	Bachelor's degree
11%	**58%**	**65%**	**77%**

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018. Percentages represent the share of employees in each demographic category who feel that their jobs are going to be impacted in next 5 years. N=1,200 (employees at senior manager, manager, and non-supervisory role).

> *Only 3% of workers aged 46–60 and 6% of those at a senior manager level believe that their jobs are going to be impacted by automation in the next five years*

Creating these pathways for your workforce means reviewing your approach to learning and career paths. A critical element will be understanding future demand for (digital) skills. Earlier research we conducted with LinkedIn on the "digital talent gap" revealed that organizations will need to put an increasing emphasis on soft skills, such as passion for learning, comfort with ambiguity, or collaboration, in addition to hard skills such as analytics, cybersecurity or cloud.[18] As Wendy Murphy, senior director, Human Resources, Europe, Middle East and Africa at LinkedIn puts it, *"Soft digital skills are required across all levels, especially the ability to learn and to be agile. Both attributes combined are hugely important in terms of making strides forward in the digital world. We do not know what the future looks like. Therefore, having people who have the resilience and ability to shift from one thing to another with ease and learn constantly to help the business progress, is immensely important."*

Equally important is the question of when those skills will be needed. If you have a workforce where the impact of automation will be gradual, you can afford to take a longer-term approach and focus on an organization-wide upskilling program that shifts skills in the long term. However, if the impact of automation is going to be felt very quickly,[19] you need to use different tactics, such as on-demand, modular courses that are easy to administer and consume.

Beyond this tactical approach, organizations must find ways to rekindle the curiosity and passion for learning that most people possess at a younger age but which weakens with time. Within the Capgemini Group, for example, one business unit does this through a gamified learning platform for digital skills. The online platform has hundreds of training modules on essential digital skills. Employees win points and certificates upon successfully completing interactive exercises after completing video-based training. Employees can share their progress on internal collaboration platforms or challenge their colleagues on specific skills.

Developing your people through a long-term approach helps them overcome natural constraints. For example, many people have a tendency to focus exclusively on the skills they need to succeed today. Helping people take a long-term view of skills may also unearth untapped potential for the organization. People possess skills and strengths that are not necessarily called on in their current job description, but which could be a valuable to the organization if uncovered. There could be a mine of untapped skills that organizations can use while strengthening employee engagement and output. To do so, organizations will have to offer employees tools to better assess their current skill levels.
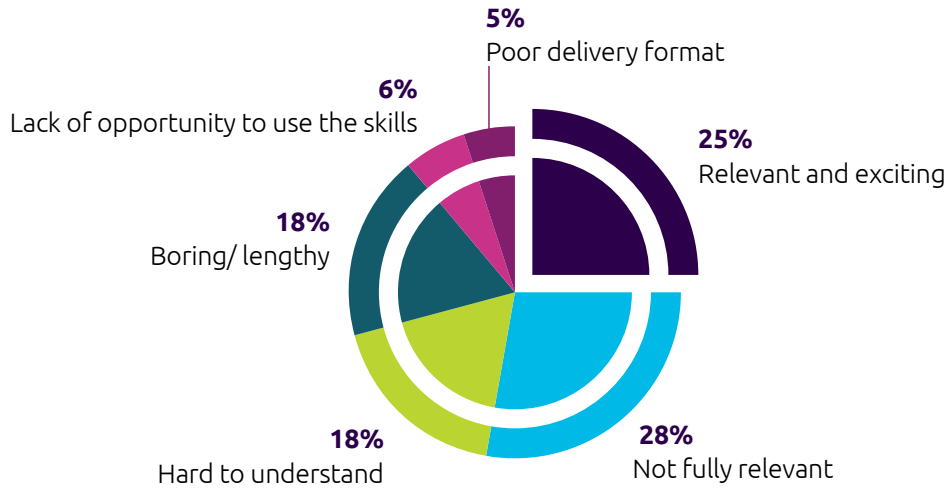
III. Make the upskilling program a win-win for your people and the organization

Upskilling programs can be ineffective if employees fail to see value in them. Our survey suggests that there is indeed room for maneuver to improve upskilling initiatives. The majority of junior-level employees do not feel that upskilling programs are a huge success. Globally, over half (54%) said that they were unsuccessful or only partially successful. The primary reason for this lukewarm response is that they felt they were not given the opportunity to use their new-found skills. Only a quarter of senior executives say that employees described upskilling programs as "relevant and exciting" (see Figure 16). This is consistent with findings from our previous research on the digital talent gap – 52% of employees with digital skills and 45% of all employees believe that the training programs designed by their organization are not helping them gain new digital skills.[20]

Creating a program that is seen as relevant and exciting are essential to make an impact in the upskilling of the workforce. For example, AT&T launched its upskilling program to equip workers whose skills were in danger of becoming outdated with new skills to perform new types of jobs. In one example, a network reliability engineer earned a master's degree in computer science by taking up an online program developed by the Georgia Institute of Technology in partnership with AT&T.[21] The employee added to their qualifications – and the organization benefited from a new skillset – without making the original role redundant.

André Richier believes the relevance of training is a key success factor. *"When the upskilling is as close as possible to the new role that needs to be performed, it motivates people immensely and boosts their confidence in a secure longer term employment perspective,"* he says. *"By offering an upskilling program that invests in the success of employees, the organization is clearly investing in the success of its business as well."*

Figure 16. Feedback received by senior executives on current upskilling programs

5%
Poor delivery format

6%
Lack of opportunity to use the skills

25%
Relevant and exciting

18%
Boring/ lengthy

18%
Hard to understand

28%
Not fully relevant

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N=418 (senior executives in charge of adapting their workforce to automation). The percentage represent share of executives that receive the said feedback.

A direct result of receiving irrelevant and ineffective learning programs is that employees are investing their own money and time in training. Our earlier research has found that 48% of all employees and 58% of employees with digital skills have invested in developing digital skills with their own money or on their own time.[22]

Getting upskilling right is also key to engagement and your employee proposition. Nearly half of employees (47%)

believe that their next job change will be because the new organization offers better digital skill development. However, many currently see their organization's upskilling programs in quite narrow terms – as a means to avoid redundancy, rather than an opportunity to continuously learn and improve one's skills. As Figure 17 shows, 62% of employees say that their organization's upskilling initiative helps them avoid being laid off, whereas less than half (46%) have said that it has made them more employable in the job market.

Figure 17. Upskilling programs are helping workers stay employed vis-à-vis helping them develop professionally

It has helped me to acquire skills to handle my tasks more efficiently — **39%**

It has helped me to acquire skills that made me more employable in the job market — **46%**

It has helped me to get rid of repetitive activities — **54%**

It has helped me stay relevant in my current job or avoid being laid off — **62%**

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N=1,200 (employees at senior manager, manager and non-supervisory role).

IV. Align learning with organizational strategy

Organizations that have succeeded in scaling up their upskilling programs show greater unity of purpose in their leadership teams, with 57% of those who are at the midway mark saying that senior leaders are aligned behind the automation vision (see Figure 18). In our experience, helping organizations devise scalable upskilling programs, the programs run rapidly when run by cross-functional teams comprising business and HR leaders drawn from top and middle management.

Figure 18. Organizations advanced in upskilling have greater alignment at senior leadership level

48% 57%   45% 61%

Senior management/leaders are aligned and committed behind the automation vision

Our automation vision and the vision for workforce transition complement each other

Yet to start   Midway

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N =72 for midway of full-scale upskilling; N=344 for yet to start full-scale upskilling (senior executives in charge of adapting their workforce to automation). Percentages represent share of executives in each group that say they have adopted the highlighted practice in their organization's learning function.

Organizations that have scaled their upskilling initiatives have also put emphasis on transforming their learning processes (see Figure 19).

Figure 19. Organizations advanced in upskilling have transformed their learning processes
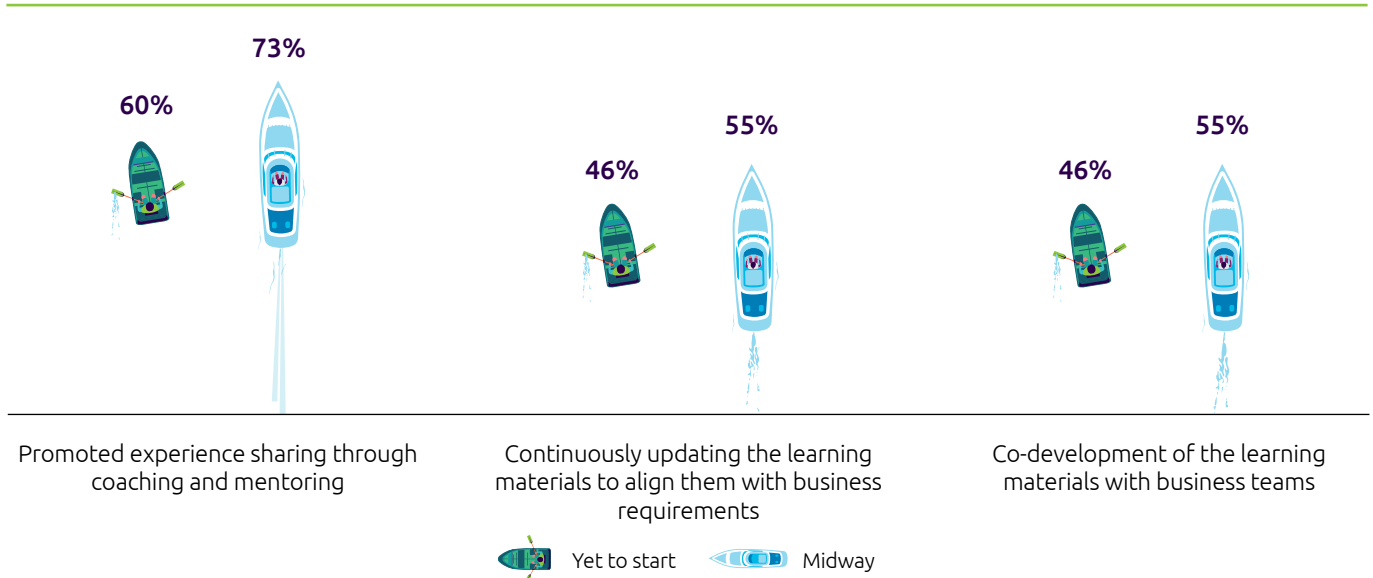
60% 73%   46% 55%   46% 55%

Promoted experience sharing through coaching and mentoring

Continuously updating the learning materials to align them with business requirements

Co-development of the learning materials with business teams

Yet to start   Midway

Source: Capgemini Research Institute, Automation and the Workforce survey, July–September 2018, N =40 for midway of full-scale upskilling; N=173 for yet to start full-scale upskilling (senior executives in charge of adapting their workforce to automation). Percentages represent share of executives in each group that say they have adopted the highlighted practice in their organization's learning function.

61% of executives at organizations midway through a large-scale upskilling believe that their automation vision and that for workforce transition complement each other vis-à-vis 45% at organizations that are yet to upskill their workforce at scale

Traditional learning and development functions have been targeting the workforce in a hierarchical way. This approach groups employees based on grades or years of experience rather than the skills that need to be imparted to them. Additionally, traditional learning programs rarely go beyond classroom training or eLearning. Transforming learning processes is therefore crucial since these approaches will not be very effective for tomorrow's skills. Imparting soft skills requires a more experiential and on-the-job learning approach. For instance, methodologies such as Working out Loud can be useful.[23] Working out Loud promotes the creation of circles – small, peer-support groups where individuals come together to build relationships and experiences linked to a goal. This creates a shared sense of trust and a feeling of belonging that help employees improve agility, innovation, and collaboration.

The learning processes also need to be more learner/human centric – putting the learner at the heart. This requires a learning curriculum and platform that is easy to handle, easy to update, and potentially quick in providing new releases. To impart necessary skills to deal with automation, Capgemini has set up "Automation Drive Academy" – a training program on the latest tools and technologies in intelligent automation and AI as well as new ways of working. The Academy is supported by "Automation Drive Library" – a global knowledge hub of intelligent automation and artificial intelligence assets. It serves as a single real-time source for compiling and sharing automation assets and implementation experience across Capgemini. The Library has a large repository of automation use cases and case studies implementations across the organization, helping share knowledge and expertise on automation opportunities, reusable resources, and best practices.

V. Enable leaders to communicate effectively and manage change

Communication is as important a success factor for upskilling as it is for any change management initiative. Organizations that have evolved their upskilling initiative put a strong

emphasis on top-down communication. At nearly 75% of organizations where an upskilling initiative is underway, leadership frequently interacts with the workforce on the topic. Our previous research has shown that 63% of employees would prefer joining organizations with a flat hierarchy, accessible management, and renowned upskilling programs.[24] Leadership communication can go a long way in improving the feelings of accessibility and awareness of upskilling among employees.

Leading organizations realize this and enable their leadership to effectively communicate with the workforce. These organizations place a lot of focus on timely communication, communicating frequently and via a range of channels, such as mailers, internal collaboration platforms, and webinars. For our Automation Drive Academy initiative, we found this to be crucial. Consistent communication from leadership helped motivate the team, resulting in over 25,000 team members getting trained in just one year.

Further, our experience shows that it is important to identify each individual impacted by automation and interact with them throughout the journey. This involves being very transparent about how directly or indirectly they are impacted, what this change means for them, and how much time they have to make the change work for them and their organization. Every individual may be impacted differently, and this must be taken into account when devising their customized transition plan.

Finding the appropriate channels for communication is key. Organizations must find a way to make a personal and direct connection with the affected employees. In-person meetings cascading down the hierarchy, townhalls, and roundtable discussions with representatives of specific groups turn out to be more effective than impersonal communication via mails, videos/podcasts, or posts on internal forums. Eberhard Schroder says, *"Change management rests on the shoulders of communicators. A message delivered personally and empathetically is much more likely to yield a positive outcome than an indirect, impersonal one any day."*

Conclusion

It is clear that upskilling and automation rollout need to go hand in hand to realize productivity gains. The good news is that this integrated approach delivers greater benefits while also motivating staff to deliver even more. Employees at organizations with advanced upskilling initiatives are able to advance their careers and embrace new responsibilities. The main barrier to achieving these gains lies with the gap between executives and employees on attitudes towards automation. Organizations must start by making sure their leaders engage with their people, encouraging them to embark on the automation journey as true partners.

Research Methodology

For this research, we surveyed 800 executives and 1,200 employees in supervisory and non-supervisory roles. From each company, we surveyed one senior executive in charge of automation deployment, one senior executive in charge of workforce upskilling, and three professionals from senior manager/manager or non-supervisory roles. These respondents were drawn from over 400 organizations, having annual revenues of over US$1 billion each. More than half the organizations in the survey have annual revenues of over US$5 billion each.

Respondent profile:

By country

- India — 8%
- United States — 14%
- China — 8%
- Germany — 10%
- France — 10%
- Italy — 10%
- United Kingdom — 10%
- Netherlands — 10%
- Spain — 10%
- Sweden — 10%

By industries

- Manufacturing - Industrial — 16%
- Retail — 18%
- Financial Services — 16%
- Automotive — 17%
- Energy and Utilities — 16%
- Consumer Goods — 17%

By grades

Director and above
(HR, general management
and strategy)

20%

Associates,
senior associates,
managers and
senior managers

60%

20%

Director and above
(other business functions)

By job functions

Manufacturing

Supply Chain

Risk and Compliance

Human Resources

Customer Experience

5%

4%

Procurement

5%

20%

5%

Information
Technology

6%

15%

Customer Service/
Support

7%

15%

General
Management/Strategy

8%

Finance

9%

Sales and
Marketing

We also conducted one-to-one interviews with a range of senior executives and academics.

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Value Proposition: AI/Automation is the next frontier for digital transformation. It will disrupt the employer/employee relationship and fundamentally reshape our organizations. Job profiles are fundamentally shifting, demanding re-skilling, up-skilling, and change management. Different leadership and talent are required, and new ways of working must be put in place to deliver outcomes in the digital age. Partnering with Faethm, we quantify the impacts, prioritize skilling needs and deliver learning journeys. We believe the potential of automation can only be leveraged with a clear skilling program and change management to take employees along on that journey.

Our approach: A workforce strategy aligned with the overall automation strategy bridges the gap between the current state and required future skills and roles in the organization.

- Current state assessment to quantify the automation impact on the workforce and to define skilling strategy and priorities
- Identification of future job profiles based on the organization's digital and automation strategy and gap analysis to define the skilling program to the desired future state
- Vision of the future state of the workforce to set the strategic direction, change management supporting communication and a skilling program to enable employees in skills and capabilities.

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Capgemini has a long-standing history in accompanying transformation and learning. We help in answering key questions to prepare building a future-ready organization in the age of automation. We thereby, focus on different stakeholder groups, from leadership, over employee to customer, as well as a conducive organizational setup and culture – enabled by a human-centered design approach to change management. Our asset is a strong collaboration with clients to architect and deliver skilling programs end-to-end.

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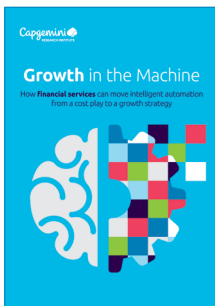# Discover more about our recent research on digital transformation

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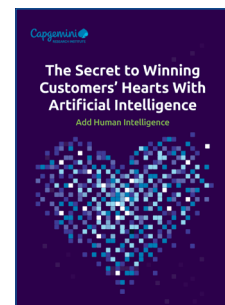

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