



Reskilling Japan

Three steps to navigate Japan's skills challenge

Executive Report

Education



In this report

Japanese executives identify which skills are critical for today's workforce.

Japanese executives predict which factors will most impact skills demand in Japan over the next five years.

We identify how industry, education and government leaders in Japan can foster regional ecosystems, innovative training solutions and individual skill development.

How IBM can help

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Building tomorrow's talent today

Following decades of stagnant wages, sluggish economic growth and the continuing threat of deflation, Japanese salaries and prices are beginning to rise.¹ Unemployment hit a 25-year low in early 2018, and adverse demographics are now motivating serious investment in workforce skills.² At the same time, advanced technologies including cognitive computing and artificial intelligence (AI) are redefining required workforce skills. In Japan as elsewhere, education curricula and training programs often lag behind. Will new technologies reinforce Japan's economic vitality or threaten it? Based on insights of more than 400 Japanese executives, this report outlines the country's skills challenges, identifies new opportunities and offers recommendations to sustain future economic success.

At the demographic vanguard

Japan has become a test case for economic and social forces that will inevitably impact other major industrialized economies. Instead of managing growth and expansion, Japan's government finds itself facing the opposite challenge: managing a declining population with an inherent risk of decelerating economic growth.³

While the economic challenge is different, the end objective of policy makers remains the same — how to ensure the highest possible standard of living for the largest number of Japan's citizens.⁴ Recent World Bank data suggests that Japan's population will shrink from 125 to 100 million by 2050.⁵ And the composition of the population will shift as well. Today, working-age individuals aged 15 to 64 represent 60 percent of the population in Japan, compared to 65 percent in the United States and 66 percent in India. In 2050, however, Japanese 15 to 64 year olds will represent only 51 percent of the population compared to 61 percent in the United States and 68 percent in India.⁶

The economic impact of such dramatic shifts in demographics is massive. Consider, for example, the consequences of a shrinking tax base along with the expected average lifespan of 84 years in 2016 increasing to 88 years by 2050. One implication is that rather than taxation revenue from a working-age citizen supporting 1.7 individuals as it does today, a typical working-age Japanese citizen in 2050 will need to support 2 individuals.⁷ The needs of retirees will weigh heavily on workers. Funds that have historically been assigned to crucial growth-supporting programs such as education, training, childcare and similar services will increasingly be consumed by social security and healthcare for older citizens. Negative impacts on education quality and availability and intensifying disincentives to bear children will further exacerbate the problem, potentially leading to even greater challenges for future generations.⁸

**90%**

of Japanese executives say that competition is coming from new and unexpected sources

**89%**

of Japanese executives indicate that partnering is essential to build necessary capabilities in the current market environment

**78%**

of Japanese executives are looking to acquire new talent from outside the organization to meet skill needs

Transforming technology

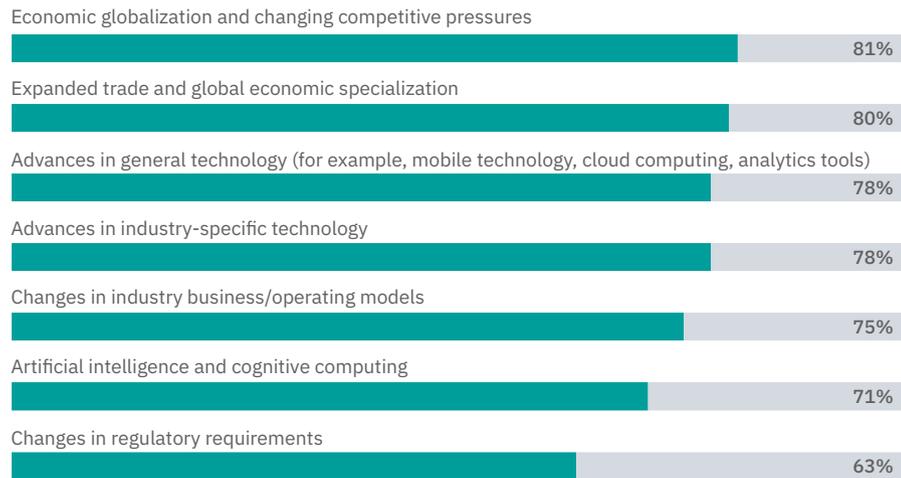
To better understand the challenges facing the Japanese economy and the attitudes and responses of Japanese leaders to these challenges, the IBM Institute for Business Value in collaboration with Oxford Economics surveyed more than 400 Japanese leaders among a global sample of 5,600 leaders across industry, government and higher education. (For more information on the research, see the Study approach and methodology section on page 17).

Japanese executives surveyed recognize that new technologies along with continuing advances in globalization are dramatically impacting the changing shape of workforce skills. When asked to identify the factors impacting skills demand in Japan over the next 5 years, 81 percent identify globalization, 80 percent identify expanded trade and economic specialization, and as many as 3 in 4 identify changing technology and its implications. Three quarters identify changing business and operating models, while more than 70 percent highlight the likely impact of AI and cognitive computing (see Figure 1).

At the same time, Japanese executives identify other implications of this new wave of technologies — most particularly, technology’s ability to reshape customer expectations and behavior and the significant impact on traditional industry structures and the economy as a whole. Eighty-three percent of Japanese executives tell us that customer buying behavior is shifting from a strictly product or service basis to an experience basis. Seventy-eight percent say that their traditional industries are being reshaped. And 90 percent see competition in the future coming from new and unexpected sources.

Figure 1

Factors impacting Japan's skills demand in the next five years



Source: IBM Institute for Business Value Global Skills Study.

As a result, almost 80 percent of the Japanese executives surveyed indicate that traditional business models employed by their organizations are no longer sustainable. Seventy-three percent tell us they are actively pursuing strategies involving synergies with other organizations, and 89 percent view partnering with other organizations as essential to expand capabilities.

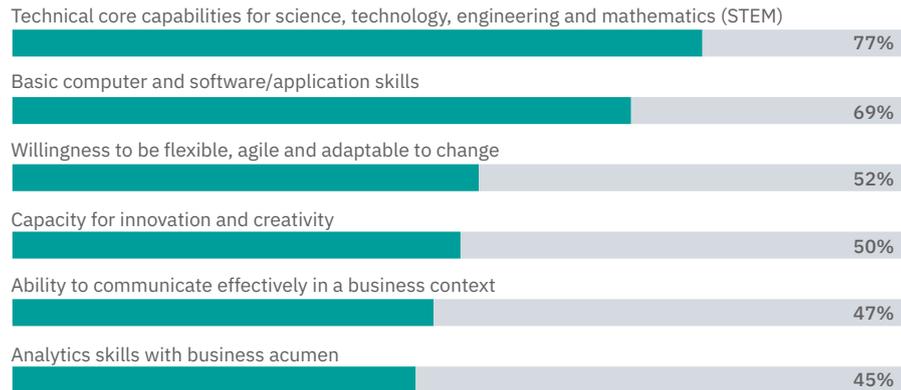
Accelerating upskill

Technology-fueled disruption impacts demand for workplace skills in three important ways. First, both the demand for skills and the types of skills required by industry change. Second, the supply or availability of the right skills is unlikely to keep pace. And third, the quality of the skills available likely becomes more inconsistent.

Japan's business leaders are concerned about workplace skills. Seventy-three percent tell us they struggle to keep skills current, and 73 percent identify significant gaps in knowledge of even core skills among new recruits. Sixty-three percent struggle to find appropriately skilled workers in local labor markets, and almost 60 percent speak of challenges in maintaining the relevancy of skills of long-term workers. Strikingly, of the Japanese executives surveyed, only 26 percent maintain that their organization's business culture adequately supports employee career development.

In terms of specific skills concerns, Japanese executives' biggest focus is on core technical and computer skills. Seventy-seven percent of those we surveyed identify science, technology, engineering and mathematics skills (STEM) as critical necessary skills, while 69 percent highlight basic computer skills. One in two executives cite the capacity for innovation and creativity as a crucial workforce characteristic (see Figure 2).

More than executives in most other countries, Japanese executives see formation and deployment of workforce skills as a central part of a social contract. When asked who should bear most responsibility for developing and maintaining workforce skills, fully 91 percent of Japan executives identify government as principally responsible. Eighty-two percent say higher education institutions are responsible for delivering graduates with necessary skills, and 46 percent cite secondary education institutions. Only six in ten executives tell us that individual graduates or employees themselves are responsible for their own skills development and maintenance. Forty percent assert that individuals bear little or no personal responsibility for their own skills currency.

Figure 2*Top skills critical for Japan's workforce*

Source: IBM Institute for Business Value Global Skills Study.

Most Japanese executives are happy with the ability of Japan's higher education institutions to equip graduates with the skills they need to be successful in the workforce. Eighty-one percent maintain that higher education is currently effective at expanding access to educational programs and enhancing learning experience, while 75 percent say that higher education is currently helping prepare individuals with the skills needed to compete. Seventy-two percent declare that education systems are effective in updating curricula and programs to keep pace with technological changes.

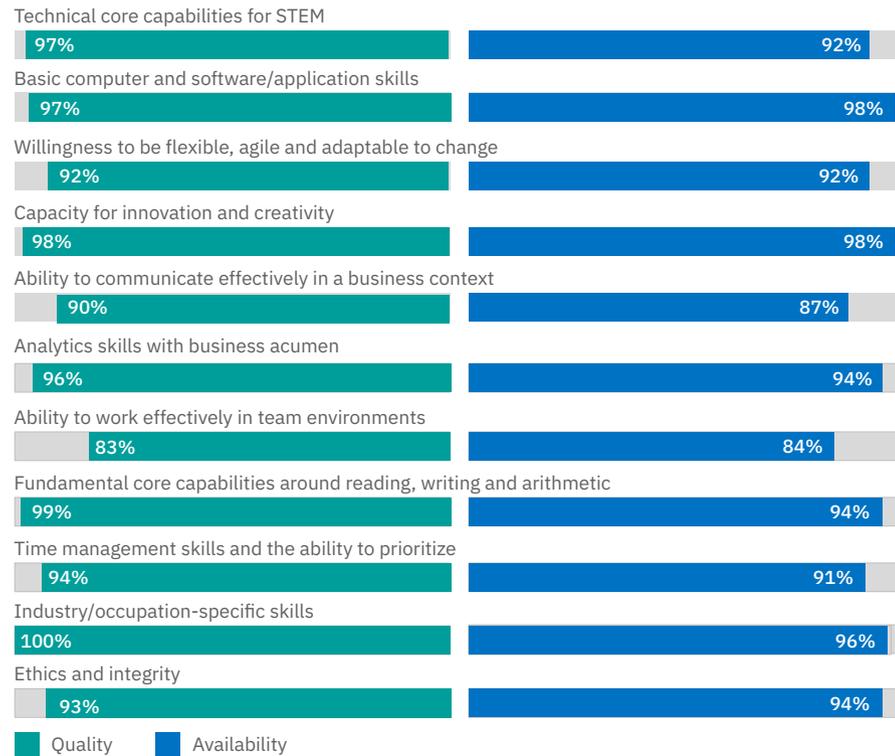
However, Japanese executives are less convinced in the ability of the formal education sector to support lifelong employee learning. As few as 48 percent tell us that higher education institutions promote lifelong learning and ongoing skills development. And only 58 percent say that pre-higher education institutions such as secondary schools are effective in preparing young people for the workforce. Given their views, it is surprising that only 41 percent of Japanese executives say that the private sector is responsible for forming and maintaining the workplace skills – significantly lower than in the United States at 62 percent and the United Kingdom at 61 percent – and a bit lower than Germany at 46 percent. Given the centrality of skills currency to the success of Japanese businesses, this low recognition of the private sector’s role in updating and maintaining workforce skills is also concerning.⁹ At best, it suggests poor recognition of the role that employers will need to play in retraining staff to adapt to new emerging technologies. At worst, it reflects corporate obfuscation.

Nonetheless, Japan’s employers remain highly focused on getting the best out of existing human resources in their organizations. Eighty-two percent are either actively moving or planning to move talent across business units and divisions, and 78 percent are either actively acquiring or planning to acquire talent from outside the organization.

IBM Institute for Business Value analysis suggests that around the world, many business and higher education leaders, as well as policy makers, might not fully appreciate the reality of the skills challenges their organizations face.¹⁰ In Japan, for example, 73 percent of industry leaders identify gaps in core skills for newly recruited employees as their single greatest business challenge, and 69 percent of Japanese corporate recruiters tell us they cannot find applicants with sufficient practical experience.¹¹ However, when asked about their confidence in skills quality and availability, those same executives tell us that the current needs gap remains small (see Figure 3).

Figure 3

Confidence in availability and quality of most critical skills in Japan's workforce



Source: IBM Institute for Business Value Global Skills Study.

Ninety-seven percent of Japanese executives tell us that Japan's educational institutions produce graduates with high-quality STEM skills, and 92 percent say institutions produce them in sufficient numbers. Ninety-two percent of executives indicate that Japan's workforce already demonstrates a high level of willingness to be flexible, agile and adaptable to change, and an equal percentage maintain that such highly talented labor is, even now, readily available.

Ninety-eight percent of Japanese business leaders tell us that workers already possess significant capacity for innovation and creativity, and an equal percentage say that these types of innovative individuals are readily available today. But at the same time, as we have seen, a stark dichotomy is present, as almost three quarters of Japanese executives tell us they are unable to find sufficient numbers of these individuals themselves.

Clearly, Japanese executives are confident in the economy's ability as a whole to deliver sufficient numbers of candidates with the skills they require. But each respondent individually is experiencing significant challenges obtaining those same skilled human resources that they need. High optimism about the economy as a whole coexists with significant pessimism about one's own labor market situation. No one believes that a skills crisis exists in Japan — and yet almost everyone reports personal experience of it.

In a consensus-driven economy like Japan's, unless a significant majority of business, education and policy leaders believe that a systemic problem exists, little effort and few resources are likely to be assigned to resolving it. With little consensus that the Japanese economy as a whole is experiencing a skills crisis, it is unlikely that significant efforts will be advanced to redress the labor market challenges reported so clearly by Japanese businesses.

It is imperative that Japanese business leaders recognize that the skills challenges they are experiencing individually are also being experienced by other business leaders across the economy. Leaders' experiences are not an aberration that will be magically resolved. Japanese institutions will not miraculously deliver the types and quantity of skilled resources that business leaders need to innovate and grow their organizations. The underlying problem needs to be identified and agreed upon by executives at large. And responses need to be actioned systematically to reorient the economy toward delivering the types of skilled resources needed at the scale required.

Kyoto Alliance creates local skill development ecosystem

Established in 2009, the Kyoto Alliance is a partnership between local businesses, governments and universities in Japan's Kyoto prefecture. To foster local workforce training and development, the alliance created a platform for skills development, educational program coordination, and job matching services for university students and local businesses. Through collaboration with local communities, businesses and universities, the alliance has formed an ecosystem for tackling human resource development issues in the area.¹²

Where from here?

Our analysis indicates that growth in Japan can be accelerated by adopting three distinct strategies for skills enablement:

1. Build strong regional ecosystems.
2. Create innovative training solutions.
3. Enable individual skills development and advocate personal responsibility.

1. Build strong regional ecosystems

As many as 93 percent of Japan's higher education leaders tell us that improving collaboration among ecosystem partners, including businesses, regional and other governments, and their own institutions, will positively impact economic outcomes.

Fifty-eight percent of Japanese executives say that improving collaboration in curriculum development between higher education institutions and industry can mitigate skills challenges and accelerate growth. Fifty-four percent tell us that increasing private sector investments in workforce training programs would have a similar impact. Fifty-two percent cite "bridge-building" work-based learning programs for students attending higher education institutions as effective. And 50 percent say that increasing government investment in workforce training programs would also be economically beneficial.

Recent empirical evidence suggests that three elements in particular operate to create and sustain effective skills ecosystems. First, engagement and leadership from industry, strong connections with government leaders and clearly defined ecosystem coordination or orchestration are critical to successful ecosystem collaboration. Indeed, 65 percent of Japanese executives cite lack of interconnectivity among partners as a key challenge to establishing a successful ecosystem platform.

Second, regional ecosystems need to operate according to the concept of mutuality. A common vision and charter need to be established and agreed upon by ecosystem partners. Effective mechanisms should be put in place to provide accountability between partners, along with clearly defined processes to resolve any conflicts or issues. Accordingly, 69 percent of Japanese executives state that potential partners' lack of vision is also a major challenge in establishing successful ecosystems.

Third, ecosystem partners must define, measure and agree upon outcomes. Early wins can address individual fears or concerns among partners as well as create precedents around how and what should happen when. Data-sharing processes can be put in place to encourage transparency and accountability. Fittingly, 61 percent of Japanese executives cite misalignment of strategic objectives as another big challenge in setting up a successful ecosystem platform.

NTT Corporation partners with local university for cyber security research

To help manage growing cyber security risks, NTT Corporation partnered with Waseda University to research and develop cyber security technologies. In doing so, the company aims to create a talent pool of graduates skilled in this field who can contribute to cyber security promotion in the company.¹³

Fujitsu partners for imparting game-based training to employees

Fujitsu partnered with an online game-based learning company to introduce innovative training for its employees. The game-based learning training tool motivates employees to take control of their skills development through self-learning, as well as assess themselves in near real-life scenarios. Through this initiative, Fujitsu has been able to improve the results of other training models, while meeting the challenges associated with having different generations and professional groups in the workplace, managing a geographically dispersed workforce and breaking with traditional training formats.¹⁴

Next steps to build regional ecosystems

Identify the right partners and empower an orchestrator: Identify key partners from government, education and industry, and define and empower a strong orchestrator to facilitate connections and collaborations, recruit new partners and build consensus.

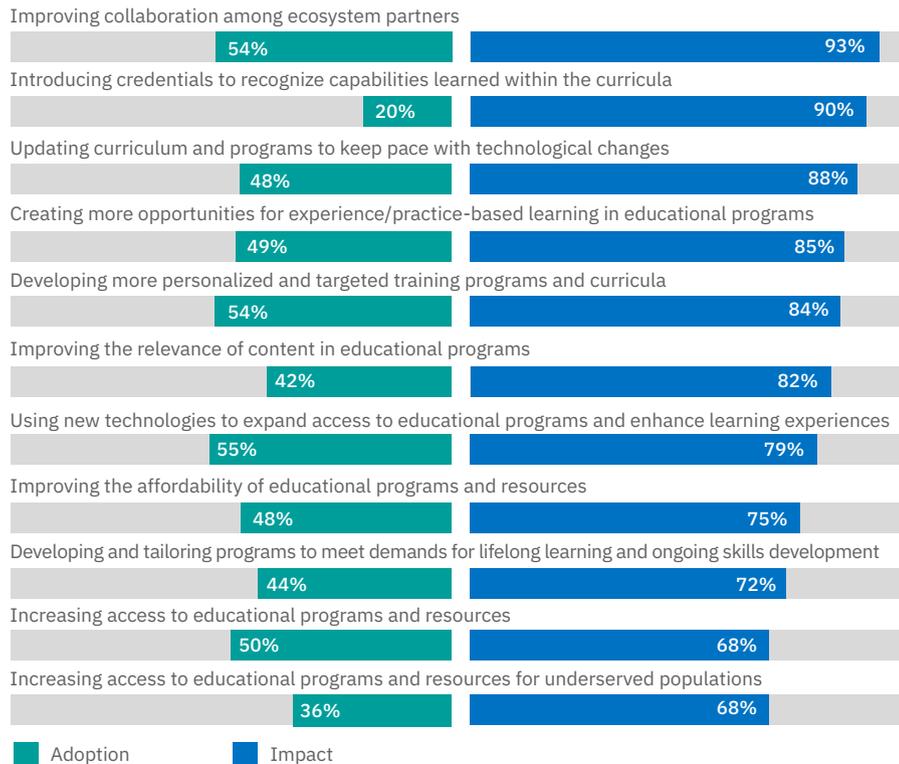
Crystalize vision, define objectives and gain commitment: Define terms and reach agreement on a clear common vision and specific commitments across ecosystem partners. Define ecosystem business intelligence requirements and strategies for addressing data collection and sharing among partners.

Formalize sustainable processes and design: Formalize processes and accountability mechanisms to promote partner engagement and commitment. Encourage partners to align internal business metrics to the ecosystem vision.

2. Create innovative training solutions

There remains a significant gap between the specific educational solutions Japanese education leaders judged most impactful and adoption of those solutions in the Japanese economy (see Figure 4).

In addition to the dichotomy between the anticipated impact of ecosystem engagement and implementing actions to define and embrace ecosystems, other areas also show disconnects. For example, 88 percent of Japan's higher education leaders expect a significant economic impact if strategies to update curricula to keep pace with technological change are implemented. But only 48 percent of higher educational institution leaders tell us that they are doing anything to pursue these types of strategies.

Figure 4*Skills and education strategies adoption rates and anticipated impact*

Source: IBM Institute for Business Value Global Skills Survey

P-Tech enables success of previously untapped talent

The Pathways in Technology Early College High School (P-TECH) model integrates high school, college and workplace learning. Upon completion of a six-year program, students can earn both their high school diploma and an industry-recognized two-year post-secondary degree. Students are paired with industry mentors and participate in work site visits and project days, as well as skills-based, paid internships. Successful graduates are first in line for jobs with their industry partners.¹⁵ The first P-TECH schools in the United States have already produced 100 graduates. And the IBM P-TECH network — begun with the first school in Brooklyn in 2011 — is expected to expand to 80 schools across the United States and abroad.¹⁶

Using technology to improve access to and the quality of education programs shows a similar divergence. Seventy-nine percent of Japanese higher education leaders see a positive economic impact for Japan from improving access to and enhancing educational experiences for students in higher education. But only 55 percent are doing anything about it.

Similar differences are found in other areas of higher education in Japan, including creating more personalized education experiences and curricula and improving relevance of education and training programs. We see similar disconnects in the perspectives of Japan's workforce development professionals and policy makers.

Next steps to create innovative new training solutions

Education leaders should assess and pursue strategies that have proved successful elsewhere in Japan and around the world. These might include improving relevance of content in educational programs, introducing systems of credentials that visibly recognize capabilities demonstrated within curricula, expanding opportunities for experience or practice-based learning, and working more closely with industry to update curriculum to keep pace with technological change.

Industry or business leaders can build strategies to better identify and assess opportunities to partner with higher education institutions, regional governments and other potential ecosystem partners to expand and deepen apprenticeship and internship programs, implement formal skills recognition programs and expand certification programs.

Government leaders might consider expanding incentives to encourage private sector investments in workforce training; providing frameworks for consistent governance around skills recognition and certification programs; and providing physical or virtual spaces that encourage education institutions, businesses and others to come together to share experiences, ideas and business objectives.

3. Enable individual skill development and advocate personal responsibility

Sixty percent of Japanese executives maintain that individuals should bear significant personal responsibility in developing and maintaining work skills. And they are confident in workers' abilities to do this, with only a quarter of those surveyed expressing concern that workers lack sufficient motivation to achieve this objective. Considering that 59 percent of Japanese executives say maintaining skills relevancy is one of their organization's biggest challenges and only 48 percent indicate the current education system is helpful in maintaining skills, it is incumbent on individuals to step up and find ways to address their own skills needs. Employees are likely to find increasing support for assuming greater personal responsibility for their own workforce skills development. Rapid advances in AI and cognitive computing provide new ways to tailor education and learning individually, affordably and at scale. And these valuable tools are likely to become increasingly widespread as they become ever-more refined and affordable.

Next steps to enable individual skill development and personal responsibility

Education leaders can pursue new opportunities to leverage technologies including personal, AI-enabled learning assistants to create highly personalized, targeted training programs and curricula that support both immediate skills gaps and lifelong learning for individuals.

Waseda University heads consortium to foster skills development

As part of a government initiative, Waseda University is leading a consortium of organizations from industrial, government, academic and financial sectors in an effort to strengthen complementary and synergetic collaborations between institutions. The consortium aims to build a talent pool to address the shortage of specialists skilled in new digital technologies such as AI, the Internet of Things (IoT), big data and cyber security.¹⁷

Hitachi Solutions partners to assess employee skills

Hitachi Solutions Ltd. partnered with a technology firm for a detailed in-depth quantitative assessment of the IT skills essential for its young engineers, particularly in the areas of security and virtualization. Hitachi then leveraged an IT skills scorecard to identify skill gaps and designed training programs to help individual engineers close the gaps. Assessment results help Hitachi train employees, increase productivity and, at the same time, assist young graduates with career planning.¹⁸

Industry leaders can aggressively promote the importance of lifelong learning and ongoing skills development among their employees, as well as pursue partnerships and other opportunities to make educational programs more relevant, accessible and affordable for all.

Government leaders might explore new opportunities to reduce barriers and build scale in applying advanced technologies to enable personalized learning across industries. Additionally, government leaders might consider improving their knowledge of leading practices in the area of individualized learning, as well as expanding workforce development programs and incentives for regional industry and education leaders to develop their own programs and capabilities that enable lifelong learning to expand across the economy.

Study approach and methodology

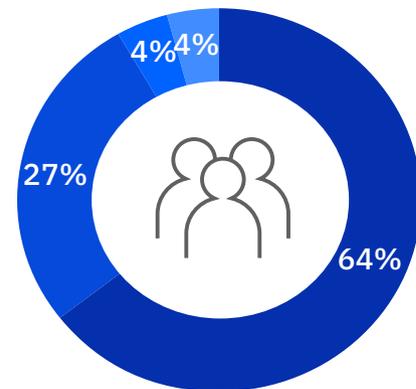
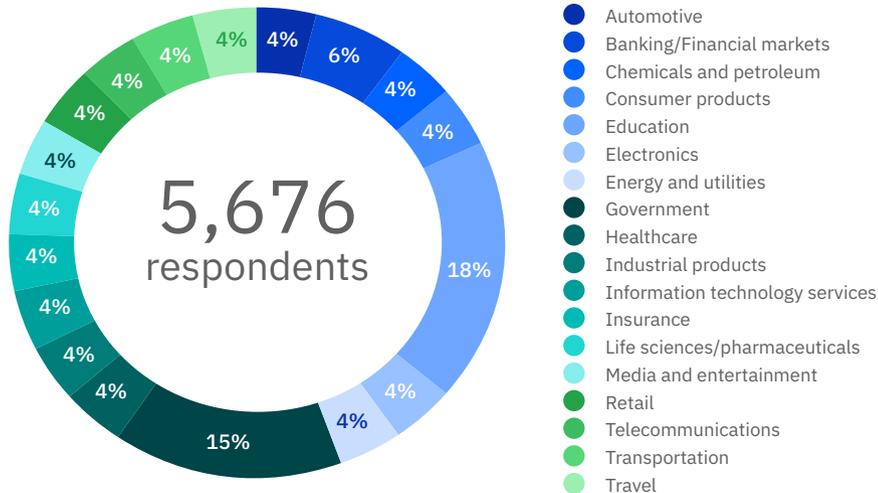
In cooperation with Oxford Economics, the IBM Institute for Business Value surveyed 5,676 global executives representing 18 industries and 48 countries, including 967 from North America, 657 from Latin America, 1,372 from Western Europe, 408 from Eastern Europe, 440 from the Middle East, 400 from Africa, 611 from South and South East Asia and the Pacific, 410 from China and 411 from Japan. Among the 5,676 were 830 leaders of government institutions (including 255 leaders from workforce development/public employment service agencies and 255 workforce/labor policy executives) and 1,505 leaders of higher education institutions (including 609 from technical or vocational schools or community colleges). Average revenue or budget of organizations surveyed was approximately USD 3 billion.

Industry – CEOs, CFOs, CIOs, CMOs, COOs, CHROs and heads of innovation/strategic alliances

Education – Chancellors, vice chancellors, presidents and deans of higher education institutions; leaders of technical or vocational schools or colleges; and corporate learning executives

Workforce development/employment services – Senior leaders and executives from public employment service agencies and workforce development organizations

Labor/workforce policy – Government executives responsible for labor/workforce policy



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