



A two-front battle

How governments can prevail in the face of the global skills crisis

Executive Report

Government

How IBM can help

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Tackling the global skills crisis

Rapid technological advances, increased globalization and unprecedented industry disruption are destabilizing traditional job roles and fueling a global skills crisis. While governments face many of the same skills-related challenges as the private sector, the implications are even greater as they fight this battle on two fronts. While struggling to employ staff with the skills necessary to meet organizational mission requirements, government executives also must work with ecosystem partners to ensure their regional labor markets remain competitive. To avoid negative repercussions on the missions of their organizations, as well as individuals and economies worldwide, government leaders must work with ecosystem partners to deepen the talent pool and build the workforce of the future.

The gathering storm

Digital technologies are fundamentally disrupting business and operating models. These dramatic transformations have had a profound effect on the types of workforce skills demanded by organizations in both the public and private sectors.

To gauge current skills challenges and assess future needs, the IBM Institute for Business Value (IBV) in cooperation with Oxford Economics surveyed more than 5,600 global executives representing 18 industries and 48 countries, including more than 800 executives from a variety of government organizations. (For more information, see the *Study approach and methodology* section.)

Survey responses reiterate the massive changes occurring across industries worldwide. They also reveal that government executives share similar views with their private sector peers in terms of the impact various disruptive factors will have on the demand for future skills. An overwhelming majority of government executives surveyed strongly believe economic globalization and changing competitive pressures, changes in industry business and operating models, expanded trade and global economic specialization, and advances in both



84 percent of government executives believe government should take significant or sole responsibility for worker skills



61 percent of government executives struggle to keep workforce skills relevant in the face of rapid technological advancement



51 percent of executives across industries cite finding appropriately skilled workers in local labor markets among their greatest skills-related challenges

industry-specific and general technology will have a significant impact on the future demand for skills. And more than two-thirds believe changes in regulatory requirements and advances in cognitive computing and artificial intelligence will have a significant impact on skills demands (see Figure 1).

Figure 1

Government executive views on what is fueling the storm

Factors impacting skills demand in the next five years

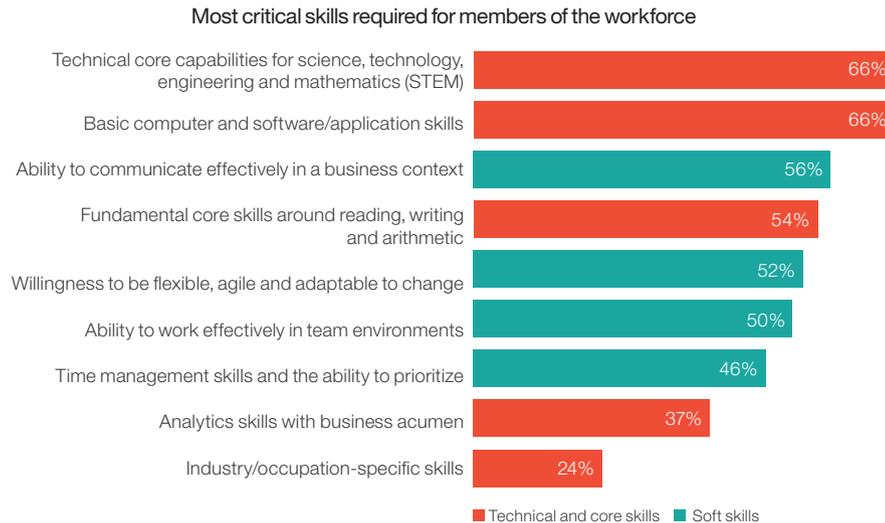


Source: IBM Institute for Business Value 2016 Global Skills Study (n=314).

Government executives share nearly identical views with executives from other industries in terms of which skills are in highest demand. While technological capabilities remain at a premium, other types of skills – soft skills – are also becoming more valuable. As organizations face increased imperatives to transform and adapt to changing economic forces, core skills such as communication, flexibility and agility are in increasingly high demand (see Figure 2).

Figure 2

Government executive views on high-demand skills

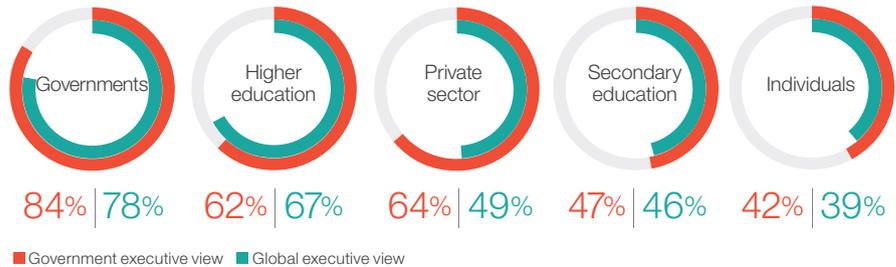


Source: IBM Institute for Business Value 2016 Global Skills Study (n=314).

We also asked executives across industries who or what entity they believe should take responsibility for developing workforce capabilities. Seventy-eight percent believe that governments should bear the bulk of responsibility in developing and maintaining worker skills (see Figure 3). A staggering 84 percent of government executives surveyed share this view. However, many government organizations have been overwhelmed by the extent and depth of the issue. In the face of geopolitical instability, demographic challenges, increased citizen services demands and economic constraints, countless government organizations are challenged to do more with less. Already stretched thin, they simply lack the capabilities and resources to address this problem alone.

Figure 3

Who should be responsible for workforce skills development?



Source: IBM Institute for Business Value 2016 Global Skills Study (global n=5,676; government n=314).

Executives globally rank higher education institutions second in order of responsibility, but a lower percentage of government executives share this view, despite having greater confidence in the ability of educational institutions to address skills challenges. Overall confidence in the ability of educational systems to solve the widening skills gap is underwhelming: Only two-thirds of government industry leaders surveyed believe institutions of higher and secondary education are adequately preparing students to be productive members of the workforce. This view is even more pessimistic among executives from the private sector. And only two-thirds of government executives believe educational institutions adequately update curricula and programs to keep pace with industry changes. This number drops to only 55 percent among executives across industries.

Sixty-four percent of government executives feel the private sector should bear significant responsibility compared to only 49 percent of private sector leaders. Interestingly, private sector executives are no more impressed by their own ability to address the skills challenge. Only 51 percent believe their organization's business culture supports employee career development – slightly lower than the 57 percent of government executives that share this belief about their own organizations. And as many as 55 percent of all executives surveyed conclude that inadequate investment from private industry is the most important challenge to overcome in addressing skills development in the future.

Despite their having arguably the most at stake, individuals are last in order of responsibility for both government and private sector leaders. Only 42 percent of government executives surveyed believe individuals have a significant responsibility in maintaining and developing their skills.

A house divided

Significant roadblocks to solving the growing skills crisis perpetuate. Complacency over the scope of the problem is evident across multiple regions. In addition, overconfidence in the ability to address core issues is striking – even among leaders in countries experiencing economic stagnation. And major disconnects between stakeholder groups are evident across regions.

Half of the global industry executives surveyed cite a lack of appropriately skilled workers in local labor markets among their greatest skills-related challenges. In addition, according to a 2015 IBM IBV study on higher education, 71 percent of corporate recruiters indicate their greatest challenge when recruiting from higher education institutions is finding graduates with practical experience.¹ Paradoxically, when asked about quality and availability of critical skills, executives in our survey express great confidence.

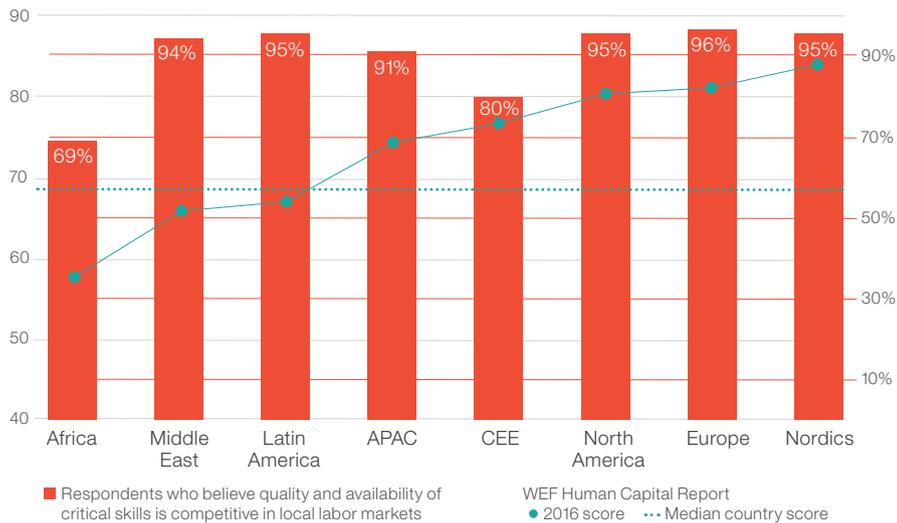
Executives in Western Europe and Nordics, North and South America, Asia Pacific and the Middle East are especially confident in their ability to obtain skilled talent. However, confidence reported belies stark economic realities. Comparing survey responses with data from the World Economic Forum's 2016 Human Capital Report reveals major gaps – what can be thought of as complacency gaps – across much of the world (see Figure 4).²

We also asked survey respondents about what, if any, cooperative efforts exist among stakeholders. While efforts are made by some global respondents to collaborate with other major stakeholders, such attempts are by no means ubiquitous. Government executives indicate that today they collaborate mostly with other government organizations as well as public sector colleges and universities to develop strategies and implement interventions to address skills-related issues. Less than a third indicate they partner with private sector and

other ecosystem partners. In the next five years, government leaders anticipate relatively modest increases in terms of collaboration with most partners with a few notable exceptions. For example, while only 30 percent of government executives collaborate with workforce development organizations today, more than half – 53 percent – plan to in the next five years.

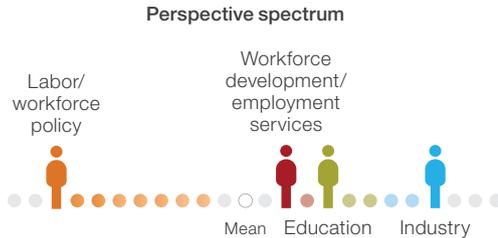
Figure 4

Confidence or complacency? Skills perceptions versus objective reality



Sources: IBM Institute for Business Value 2016 Global Skills Study (n=5,676); 2016 Human Capital Index, World Economic Forum.

Figure 5
Differing perspectives on major issues – a variance analysis



Sources: IBM Institute for Business Value 2016 Global Skills Study (n=5,676); IBM Institute for Business Value analysis.

We also discovered that divergence of opinion between major stakeholder groups is stark, particularly relating to pertinent issues such as critical skills, quality and availability of existing skills, roadblocks to progress, economic implications and responsibility for resolving challenges (see Figure 5). This breakdown is indicative of a lack of collaboration and information/data sharing among ecosystem partners.

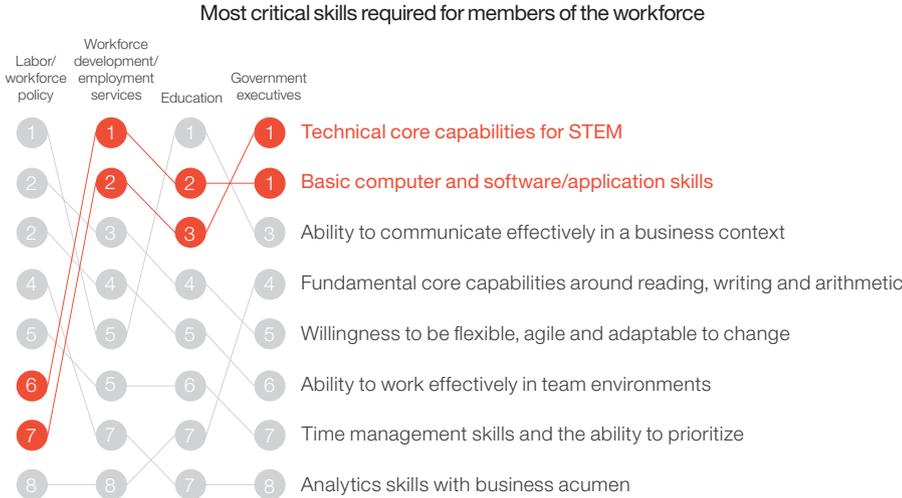
For example, perspectives regarding what skills are required vary widely, with the widest variance between executives from public and private sector organizations responsible for creating most jobs and labor/workforce policy executives influential in defining labor market programs. Executives from government and private industry rank core technical skills as most critical. However, these skills are rated near the bottom of the priority list among labor/workforce policy executives worldwide, who indicate they believe soft skills are much more important (see Figure 6).

All stakeholder groups agree that many employees in the labor force lack critical business skills in activities such as team effectiveness and business communication; however, unanimity breaks down when it comes to the question of which stakeholder group should carry the primary burden of addressing skills issues. One thing all groups agree on, however, is the centrality of government in addressing workforce skills issues.

Additionally, we determined that labor/workforce policy executives doubt the effectiveness of higher education institutions to address what they perceive as a widening skills deficit. Only 47 percent believe that higher education is preparing students with the skills they need to be competitive, and as few as 45 percent say that curricula and programs keep pace with changes in industries and economies. Government and private industry executives, on the other hand, rank formal education's effectiveness significantly higher.

When considering strategies to improve the skills climate in their respective regions, a majority in each major stakeholder group agrees that private sector investment in training programs needs to increase – much more so than government investments in education. There is also concurrence by most executives that government should accelerate investment in workforce development programs, with the notable exception of workforce development/public employment services executives.

Figure 6
Communication breakdown: “Houston, we have a problem...”



Source: IBM Institute for Business Value 2016 Global Skills Survey.

These numerous disconnects point to a dire need for improved communication and cooperation between stakeholders. Improved collaboration can afford benefits for all ecosystem partners; however, our survey reveals there is still work to be done in reaping the rewards of ecosystem engagement. Only 55 percent of government executives indicate that their organizational culture supports collaboration across different parties. However, when it comes to collaborating with ecosystem partners to address skills-related issues, 73 percent of government executives say they're able to collaborate effectively and efficiently, compared to only 59 percent of global executives.

Tackling the global skills crisis requires a team effort in which all necessary ecosystem actors align to address disconnects. With ecosystem partners working in tandem, government organizations can more effectively find and retain skilled employees to efficiently execute their organizations' missions. And industries will be better equipped to innovate at the level and intensity necessary to build and sustain job creation and competitiveness. In addition, economies will be better positioned to recruit and retain new industries, and individuals will be armed with the skills necessary for higher paying new jobs.

Charting a new course

Government leaders must take a leadership role in working with industry, education, nonprofit and other public sector leaders to build robust talent pools to help ensure the sustainability of regional workforces. We suggest they join forces with key ecosystem partners and embrace three high-level strategies:

- Build and strengthen regional ecosystems.
- Prioritize and invest in proven, innovative solutions.
- Enable and advocate for individual responsibility.

Build and strengthen regional ecosystems

Building and engaging more effectively in ecosystems – in addition to one-on-one relationships – can help all ecosystem partners more readily overcome barriers and accelerate establishment of new initiatives and innovation. Ecosystems involve complex webs of interdependent enterprises and relationships aimed at creating and allocating some form of business value. In a regional context, ecosystems might refer to strong or loose affiliations of businesses; educational institutions; local, state or national government entities; and others.³

Leading organizations recognize the benefits of active engagement in ecosystems. Three of the top-five strategies identified as most important by government and all global executives relate to improving ecosystems and collaboration (the remaining two relate to private sector and government investments in training programs). Additionally, 84 percent of education executives surveyed believe that improving collaboration among ecosystem partners has already had positive impacts, and 79 percent of labor/workforce policy executives concur.

Addressing skills-related challenges requires a concerted effort among ecosystem partners. For example, strong ecosystem collaboration will be required for many countries and regions to address skill requirements for new immigrants. More than half of government executives

Building a sustainable skills ecosystem

The Toronto Financial Services Alliance (TFSA) is a public–private partnership dedicated to making Toronto a “top-ten” global financial services center. Providing a collaborative environment in which the financial services industry, government and higher education can work together, TFSA has effectively built international awareness of Toronto’s advantages and contributed to investment and job growth in the financial sector. To further capitalize on the region’s advantages, TFSA established a Centre of Excellence in Financial Services Education, offering comprehensive financial services career advice and insight into emerging talent needs within the sector.⁴

Accelerating regional development

The Tampa, Florida, metro region has seen significant economic growth, due in large part to collaboration between higher education and industry. For example, the University of South Florida (USF) actively engages with industry through its USF Research Foundation, which helps train students for productive careers, supports research and technology transfer, and provides information and resources.⁵ Another example is the Hillsborough Community College (HCC) Ybor City campus, which engages its community through a council of stakeholders from local businesses, government, neighborhood associations, corporate partners and educational institutions.⁶ In addition, the Tampa Hillsborough Economic Development Corporation (EDC), a partnership between the public sector and private corporate investors, serves as the lead economic development agency for the region and facilitates collaboration between education institutions and industry.⁷

(54 percent) believe recent immigrants to their country require at least some education and training to contribute positively to their nation's workforce and economy, and less than a third (32 percent) believe their nation's education system is well prepared to address these skill needs.

Next steps to build and strengthen regional ecosystems:

Government leaders must take a leadership role in working with ecosystem partners in their regions to:

- Identify the right partners and empower orchestration: Identify key partners from government, education, industry and the non-profit sector, and then define and empower a strong intermediary to recruit partners and build consensus.
- Crystalize vision, define objectives and achieve commitment: Define and agree on a common vision with clearly defined roles and commitments across ecosystem partners. In addition, establish business intelligence requirements, strategy and governance for addressing data collection and sharing among partners.
- Formalize processes and sustainable design: Formalize processes and accountability mechanisms to help ensure partners remain engaged and committed, and encourage partners to align internal business metrics to the ecosystem vision.

Prioritize and invest in proven, innovative solutions

Strangely, among some organizations, there seems to be an inverse relationship between those initiatives identified as most impactful and initiatives actually adopted. Our research suggests the more impactful an initiative is, the less likely it is to be adopted. While concerning, this dichotomy points toward the need to prioritize new initiatives.

For labor/workforce policy executives, for example, there is a 54 percentage point gap between perceived impact and adoption for implementing formal skills recognition and certification

programs, a 43 percentage point gap for increasing incentives for private sector investment in workforce training and a 35 percentage point gap for implementing interventions to facilitate/ orchestrate ecosystem collaboration (see Figure 7).

For workforce development/public employment services executives, policy success appears to be undermined by low adoption rates for practical solutions (see Figure 8).

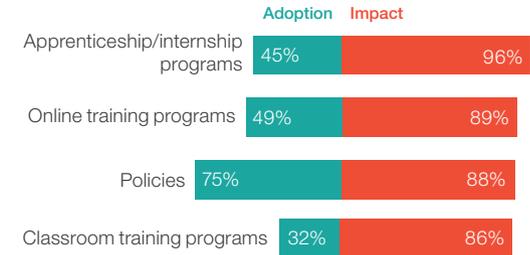
Figure 7
Reconciling policy with practice



Source: IBM Institute for Business Value 2016 Global Skills Study (n=255).

Figure 8
Form over function

Workforce development/public employment services executives
Adoption rates and observed impact of interventions in addressing skills-related issues in area of responsibility



Source: IBM Institute for Business Value 2016 Global Skills Study (n=255).

Building effective models that scale

The Pathways in Technology Early College High Schools (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 partner. Launched in 2011 in Brooklyn, New York, the model has expanded to over 50 U.S. schools and 300 industry partners, with the goal of expanding to more than 80 schools in 2017, including some in Australia and Africa.⁸

Next steps to prioritizing proven, innovative solutions:

Government leaders should assess opportunities to adopt strategies proven to be impactful by leaders of other government organizations globally, including:

- Working with industry and ecosystem partners to create and expand apprenticeship/internship programs
- Providing incentives for private-sector investments in workforce training
- Implementing formal skills recognition and/or certification programs
- Implementing “bridge building” work-based learning programs
- Expanding/enhancing immigration policies to allow for temporary and permanent visa programs for highly skilled workers.

Enable and advocate for individual responsibility

The majority of government and global executives surveyed do not believe individuals should bear a significant responsibility in developing and maintaining their skills. Perhaps this is because they lack confidence in individuals taking responsibility for their skills futures. Thirty-eight percent of government leaders believe a lack of individual motivation to proactively update and improve skills is one of the most fundamental challenges of skills development – a view shared by 48 percent of private industry executives.

However, little confidence exists in education systems, and most employers have not demonstrated they're up to the task. Though both government and private industry employers indicate they struggle with long-term skills development of employees, addressing the issue is not a high priority. Only 57 percent of government executives indicate that their organization culture supports employee career development. Meanwhile, 52 percent of government leaders cite maintaining skills currency of long-term employees among their greatest skills challenges, and more than half rely on external vendors to develop and maintain the currency of employee skills. Additionally, according to IBM IBV benchmarking data, only 36 percent of government organizations surveyed indicate their human resources function effectively addresses and improves developing and deploying workforce skills and capabilities to match emerging opportunities.¹⁰

Even those individuals who take responsibility for skills development cannot do it alone. They must be enabled with tools and opportunities to chart their work future and continuously update skills throughout their life. Government and private sector organizations alike should focus on programs that enable individuals to chart their career courses and provide them with tools and information to make informed skills-development decisions.

Personalized learning has long been a goal for educators. Advancements in sophisticated analytics and cognitive computing have driven progress toward this goal. Data-driven cognitive technologies can enable personalized education – allowing individuals to more readily take responsibility over their skills future and improve outcomes for stakeholders across the skills ecosystem.

Building sustainable programs for critical technical skills

The National Security Agency (NSA) and the Department of Homeland Security (DHS) jointly sponsor National Centers of Academic Excellence (CAE) at more than 200 higher education institutions across the United States focused on building critical skills in cyber security. The goal of the program is to reduce vulnerability in the nation's information infrastructure by promoting higher education in cyber security defense and producing a growing number of skilled professionals to work in both the public and private sectors. Students attending CAE schools are eligible to apply for scholarships and grants through the U.S. Department of Defense Information Assurance Scholarship Program and the Federal Cyber Service Scholarship for Service Program.⁹

Personalized learning for sustaining a career

MARi is a personal learning platform that enables individuals to identify and navigate appropriate education paths, occupations and job opportunities. Functioning like a “personal learning GPS,” the MARi system quickly assesses an individual’s academic credentials and career skills and maps the fastest personalized path to achieve the desired outcomes. MARi provides freemium services to academic and non-profit partners and offers solutions for employers that let candidates match themselves to job requirements.”

Next steps to enable and advocate for individual responsibility:

- Government and education leaders should work together to:
 - Pursue opportunities to leverage advanced technologies, such as personal learning assistants, to develop more personalized, targeted training programs and curricula that support and enable life-long learning.
 - Actively promote and educate individuals – both employees and students – about the importance of life-long learning and ongoing skills development.
 - Pursue partnerships and opportunities to make educational programs relevant, accessible and affordable for all individuals.
- Government leaders should explore leveraging advanced technologies to enable personalized learning in internal training programs for employees as well as workforce development programs for citizens. Government leaders should also consider providing incentives for regional industry and education partners to develop programs and capabilities that enable life-long learning.

Conclusion

Global economies are at a crossroad. Globalization and technological advances are dramatically impacting required skills, and neither shows signs of slowing. The available labor force can either help accelerate or constrain economic evolution and growth. How governments and ecosystem partners from the private sector and academia respond will determine whether this evolution results in sustained economic malaise or economic prosperity.

Ecosystem partners working together to enable individuals

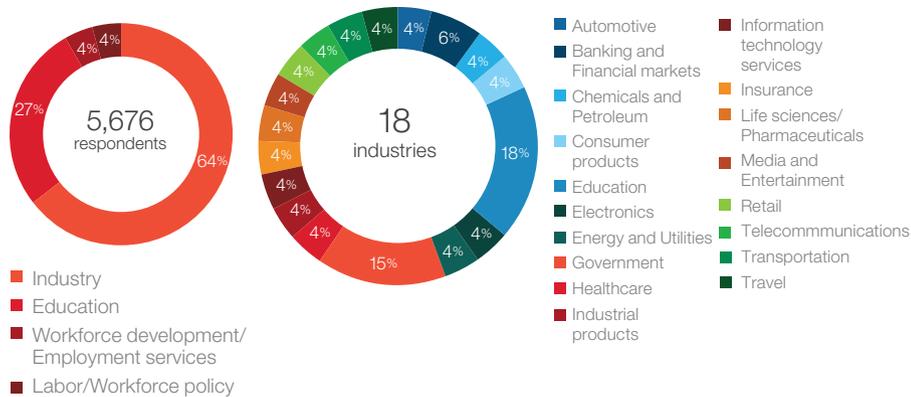
Despite paying higher average wages than the U.S. manufacturing sector, Germany's manufacturing sector succeeds in the global marketplace. It benefits from a national policy effort to support clusters of globally competitive manufacturers through public-private collaboration focused on sustaining a highly skilled workforce. The most common career pathway in Germany, the dual education system, enables students to obtain field-specific workplace skills in hundreds of occupations that cover all aspects of the economy. Participants establish close relationships with employers, and on-the-job training typically comprises two-thirds of the curriculum. This model requires investments and commitments from all ecosystem partners (for example, employers, chambers of commerce, government, labor organizations) and provides real rewards and benefits for the economy, industry and individuals.¹²

Key questions

- What is your organization's strategy for ensuring skills currency and the readiness of your workforce?
- How is your organization working with stakeholders to implement proven strategies and interventions to improve skills outcomes in your region?
- To what degree is the education system in your region providing practical and applied educational opportunities?
- How are new technologies being leveraged to enable personalized learning for individuals in your organization and your region?
- How engaged and coordinated are ecosystem partners in your region? What can your organization do to improve ecosystem coordination?

Study approach and methodology

In cooperation with Oxford Economics, the IBM IBV surveyed 5,676 global executives in 48 countries. Among them were 255 leaders from workforce development/public employment service agencies and 255 labor/workforce policy executives, as well as more than 3,600 executives from 18 industries, including 314 from government organizations. Also included were 1,505 leaders of higher education institutions, including 609 from technical or vocational schools or community colleges. Roles of those surveyed ranged from Chief Executive Officers to Chief Operating and Chief Human Resource Officers. Average revenue or budget of organizations surveyed was approximately USD 3 billion.



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