



Reskilling China

Three steps to navigate the global skills storm

IBM Institute for Business Value

Executive Report

Education

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Tapping into talent

Workplace skills have become the key business differentiator of the twenty-first century. In much the same way that manufacturing prowess, technical efficiency and organizational flexibility defined success in the twentieth century, the ability of workers to adapt to and employ leading-edge technologies is defining economic leadership today. This skills centrality provides China, in particular, significant opportunities to extend global business leadership. With the country's deep human reserves, advanced development capabilities and commitment to technological skills innovation, Chinese leaders have a tangible opportunity to redefine business and industry and, by so doing, the global economy.

Introduction

The Chinese economy has been remarkably successful over the past 30 years. This success has created a surge in economic wellbeing, helping more than a half billion people transcend poverty, turning China into a highly urbanized industrial titan and raising adult literacy to over 95 percent.¹ As a result, there is great enthusiasm about the nation's economic prospects. Most of the 1,150 Chinese executives we surveyed as part of our recent Future of China studies are optimistic about the nation's future.² Fully 93 percent of them indicate that China's economic growth can be sustained above 5 percent per year well into the future, and 21 percent believe that growth can be sustained above 8 percent.

But despite these multiple positives, a growing number of Chinese executives are expressing concern about their ability to obtain new and necessary skilled resources. And they articulate similar concern about their ability to update and maintain the skills of their current workers.

Chinese executives recognize that skills are crucial. Indeed, when asked about economic forces impacting their organizations and the Chinese economy as a whole, Chinese executives in our recent C-suite survey identified people skills as one of the most important.³

Transforming technology

In addition to surveying the 1,150 Chinese executives mentioned earlier, the IBM Institute for Business Value in collaboration with Oxford Economics also recently conducted a specific survey of more than 5,600 global business, government and education leaders on the topic of global workforce skills. More than 400 of the 5,600 executives surveyed were from China, representing 18 specific industries from across all major regions. The analysis that follows refers to the insights of these 400-plus Chinese executives. (For more information on the research, see the *Study approach and methodology* section on page 14).

**80%**

of Chinese executives say that technological advances are reshaping demand for skills

**85%**

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

**81%**

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

Chinese executives surveyed recognize that new technologies, along with continuing advances in globalization, dramatically impact the changing shape of workforce skills. Eighty percent indicate that digital technologies such as cloud, analytics and mobile will impact the types of skills required by their organizations over the next five years. According to 73 percent, rapidly evolving industry-specific technologies are having a similar effect. And 72 percent say that artificial intelligence (AI) will transform the nature of necessary workplace skills.

At the same time, Chinese executives identify other implications of this new wave of technologies – in particular, the resulting changes in customer expectations and behavior and the structure of industries and economies as a whole. Eighty-one percent of Chinese executives tell us that customer buying behavior is shifting from a strictly product or service basis to an experience basis. Eighty percent say that their traditional industries are being reshaped, and 85 percent see competition in the future coming from new and unexpected areas.

As a result, fully 80 percent of the Chinese executives surveyed indicate that traditional business models employed by their organizations are no longer sustainable. Seventy percent tell us that they are actively pursuing strategies involving synergies with other organizations, and 85 percent are partnering more with other organizations to expand capabilities.

You skill, I skill – we all need to upskill

Technologically fueled disruption is impacting demand for workplace skills in three important ways. First, while skill demand is changing, so too are the types of skills required by industry. Second, availability of skills in labor markets is becoming more uncertain. And, third, the quality of skills available is becoming more inconsistent.

Chinese executives surveyed tell us that their biggest concern currently is meeting demand for core technical and computer skills. Seventy-one percent identify science, technology, engineering and mathematics skills (STEM) as critical skills required, while 64 percent highlight basic computer skills. And a majority of executives – 59 percent – cite the capacity for innovation and creativity as a critical skill.

Unlike executives from some of the other nations, Chinese executives view both planned immigration and integration of new generations of employees into China's workforce as positive with regard to skills (82 percent and 73 percent respectively).⁴ And more so than their peers in most other countries, Chinese executives see formation and deployment of workforce skills as central to a social contract.

When determining who should bear most responsibility in developing and maintaining workforce skills, 93 percent of Chinese executives identify government as principally responsible. Eighty-one percent say higher education institutions are responsible for delivering graduates with necessary skills, while only 55 percent cite secondary education institutions. Seventy-one percent tell us that individual graduates or employees themselves are responsible. However, only 34 percent of executives say that the private sector is responsible for forming and maintaining the workplace skills they need – a significantly lower percentage compared to most other major geographies.⁶

Peking University Science Park supports technology transfer, innovation

Peking University Science Park, established in 1992, was one of the first national university science parks in China. Founded in the strong scientific research capabilities of Peking University, the park focuses on transferring the university's research achievements to key industries, including electronics and biotechnology. The park collaborates closely with leading companies across industries and has developed a scientific innovation ecosystem that provides both a platform and services to support scientific research, accelerated industrialization, company incubation, talent development and capital investing. Peking University has built ten science parks across China and one in the Silicon Valley in the United States.⁵

CRCC Asia accelerates personal and professional development

CRCC Asia, a leading provider of international internships, collaborates with over 600 companies to provide students the opportunity to further their personal and professional development. Utilizing international partners in higher education and business, CRCC's program enables students to gain insight into global business culture, meet industry leaders and build business networks. CRCC has grown from a pilot program with 20 interns in 2007 to an organization offering 6 programs to more than 7,000 program participants.⁷

Most of the Chinese executives tell us that they are moderately happy with the ability of China's higher education institutions to equip graduates with the skills they need to be successful in the workforce. Seventy-nine percent of Chinese executives say that higher education is effective at expanding access to educational programs and enhancing learning experience, while 75 percent say that higher education is effective in updating curricula and programs to keep pace with technological change. And 72 percent tell us that higher education prepares individuals with the skills they need to compete in the workforce.

On the other hand, Chinese executives are less confident in the education sector's ability to support lifelong employee learning and effectively provide necessary skills to students. Only 45 percent indicate that higher education institutions promote lifelong learning and ongoing skills development. And only 48 percent tell us that pre-higher education such as secondary schools are effective in preparing young people for the workforce.

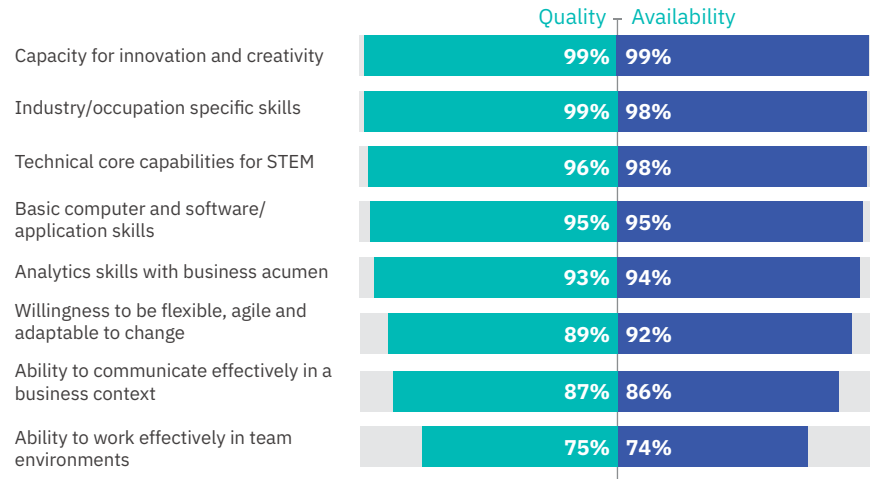
China's employers are highly focused on bringing new people with required skills into their organizations. Eighty-one percent are actively working to acquire new talent externally, while 72 percent are aggressively pursuing new types of apprenticeships and similar vocational programs.

But despite all these efforts, China's business leaders remain concerned about workplace skills. Seventy-eight percent struggle to keep skills current, and 75 percent struggle to find employees with the right skills despite their best efforts. Seventy-two percent identify significant gaps in knowledge of even core skills among new recruits. And half of those surveyed speak of challenges in maintaining the relevancy of skills of long-term workers. Strikingly, of the Chinese executives surveyed, only 29 percent say that their organization's business culture adequately supports employee career development.

Into the anomaly

Our analysis suggests that around the world, business leaders do not seem to have clear insight into the reality of the skills challenges their organizations face. For example, 71 percent of corporate recruiters in China tell us they cannot find applicants with sufficient practical experience, and 72 percent of the industry leaders surveyed in China report gaps in core skills for newly recruited employees as their single greatest business challenge. Those same executives, however, report that the current needs gap is small when asked about their confidence in skills quality and availability. This is a significant anomaly.

When asked about broader concepts of skills availability and quality, Chinese executives express significant confidence (see Figure 1). When asked about their own specific situation, Chinese executives express concerns about their ability to source appropriately skilled and qualified employees. But when asked more generally about skill quality and availability in the nation as a whole, they do not see a challenge.

Figure 1*Chinese executives' confidence in skill quality and availability**Source: IBM Institute for Business Value 2016 Global Skills Survey.*

Way to go

Our analysis indicates that growth 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 regional ecosystems

As many as 92 percent of China's higher education leaders say that improving collaboration among ecosystem partners, including businesses, regional and other governments and their own institutions, will positively impact economic outcomes.

Sixty-six percent of Chinese executives overall indicate that improving collaboration in curriculum development between higher education institutions and industry could mitigate skills challenges and accelerate growth. Fifty-eight percent tell us that increasing government investment in workforce training programs will have a similar impact. Fifty-six percent cite implementing "bridge-building" work-based learning programs while students are still attending higher education institutions, and 51 percent say that increasing private sector investments in workforce training programs will also be economically beneficial.

CAVTC builds innovative platform to meet talent

Changsha Aeronautical Polytechnic (or Changsha Aeronautical Vocational and Technical College - CAVTC) was established in 1973 to repair and maintain military equipment and provide training to skilled aeronautics personnel. CAVTC, along with manufacturers of 86 types of aircraft, has built an innovative platform that integrates talent requirement with talent supply by adjusting curriculum for students to help ensure they acquire necessary skills despite changes in technology and market conditions. As a local aviation innovation leader, CAVTC also conducts R&D programs aimed at improving capabilities of the teaching staff and creating deep experts in targeted fields. The CAVTC model is now being replicated in other similar institutions across China.⁸

Recent empirical evidence suggests that three elements, in particular, help create and sustain effective skills ecosystems. First, engagement and leadership from industry with strong connections into government leaders and clearly defined ecosystem coordination or orchestration are critical to successful ecosystem collaboration. Fully 67 percent of Chinese executives from our skills survey cite lack of interconnectivity among partners as one of the key challenges 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 can be established to provide accountability between partners, along with clearly defined processes to resolve any conflicts or issues. Seventy-two percent of Chinese executives state that potential partners' lack of vision is another large challenge to establishing a successful ecosystem.

Third, ecosystem partners must be able to define, agree upon and measure outcomes. Early wins could address individual fears or concerns among partners as well as create precedents around how and what should happen when. And data sharing processes can be implemented to encourage transparency and accountability. Sixty-six percent of Chinese executives cite misalignment of strategic objectives as another big challenge to setting up a successful ecosystem platform.

Next steps to build regional ecosystems

Leaders from *education, industry* and *public sector* can work together on three key strategies:

First, identify the correct key partners from government, education and industry, and define and empower a strong orchestrator to recruit partners and build consensus.

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

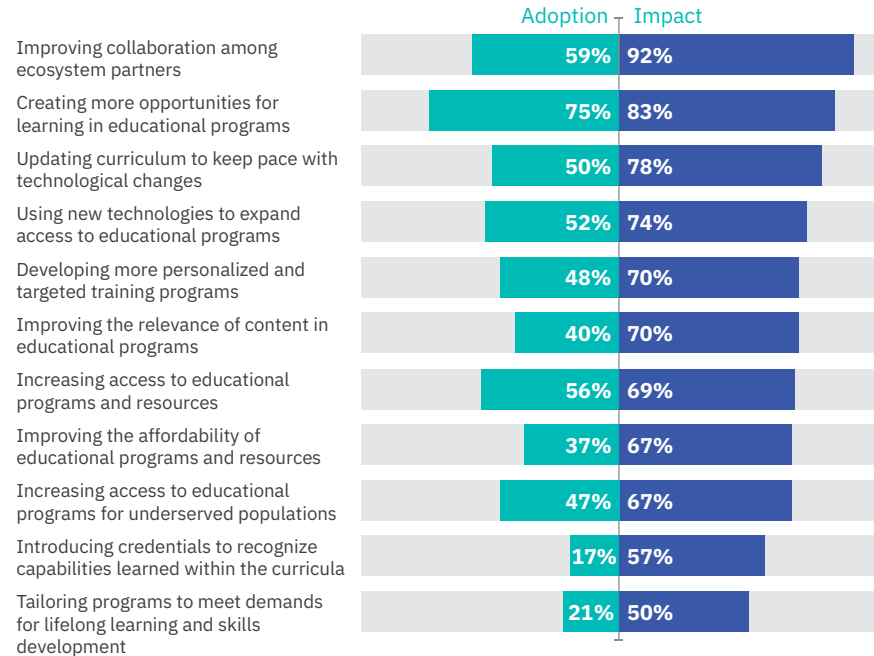
Third, formalize sustainable processes and design. Define processes and accountability mechanisms to promote partner engagement and commitment. Encourage partners to align internal business metrics to ecosystem vision.

2. Create innovative training solutions

A significant gap remains between the educational solutions Chinese education leaders judge most impactful and adoption of those solutions (see Figure 2).

SIPIVT leverages business collaboration to accelerate skills training

Founded in 1997, Suzhou Industrial Park Institute of Vocational Technology (SIPIVT) provides training services to highly skilled personnel in Suzhou Industrial Park. Drawing on successful vocational education programs from Singapore and Germany, SIPIVT has adapted programs to suit local needs. In addition to apprenticeship programs with leading companies, SIPIVT collaborates with companies to provide skill training and acts as an incubator for startups, providing both capital and technical services. For example, SIPIVT provides employee training for global Korean giant Samsung in exchange for equipment, while German company Bosch utilizes the institute for training in order management. SIPIVT has 39 major areas of study, covering most of the industries in Suzhou Industrial Park, and specifically focuses on project-based learning and talent development.⁹

Figure 2*Skills and education strategies: adoption rates and anticipated impact**Source: IBM Institute for Business Value 2016 Global Skills Survey.*

For example, there is a clear dichotomy between the anticipated impact of ecosystem engagement and the adoption of strategies designed to embrace ecosystems. Ninety-two percent of education executives that have implemented strategies to improve ecosystem partner collaboration indicate the strategies have had a positive impact. However, only 59 percent of education executives are implementing or plan to implement these strategies. When asked about strategies involving updating curricula to keep pace with technological change, 78 percent of China's higher education leaders that have implemented those strategies indicate they have had a positive impact. However, only 50 percent of education leaders surveyed have pursued or plan to pursue such strategies. Questions related to using technology to improve access and experience of education programs reveal similar differences, with 74 percent of leaders that have implemented these solutions identifying them as impactful but only 52 percent overall having used or planning to use them.

Similar differences are found in other areas including creating more personalized education experiences and curricula, as well as improving relevance of education and training programs. Differences are also evident between workforce development professionals and articulated policy.

Next steps to create innovative new training solutions

Education leaders can assess and pursue strategies that have proved successful elsewhere in China and around the world, including 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.

The Smart Learning Institute creates platform for talent and innovation

Established by Beijing Normal University and Elernity in March 2015, the Smart Learning Institute provides a platform for experimentation and research around education technology. The institute leverages the capabilities of more than 100 experts, including education and research leaders, as well as industry professionals. Students working in the research institute receive hands-on experience in education technology innovation, with research findings applied to Normal University and other universities and schools across China.¹⁰

P-Tech enables success of previously untapped talent

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 partners.¹¹ 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.¹²

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 might expand incentives to encourage private sector investments in workforce training; provide frameworks for consistent governance around skills recognition and certification programs; and provide 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

Seventy-one percent of Chinese executives declare 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 one quarter expressing concern that workers lack sufficient motivation to achieve this objective.

Considering that half of Chinese executives cite maintaining skills relevancy as one of their organization's biggest challenges and only 45 percent say 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. But employees need not go it alone. Rapid advances in AI and cognitive computing provide new ways to tailor education and learning individually, affordably and at scale.

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 more personalized, targeted training programs and curricula that support lifelong learning for individuals.

Industry or business 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 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 knowledge of leading practices in the area of individualized learning, as well as expanding workforce development programs and incentivizes for regional industry and education leaders to develop their own programs and capabilities that enable lifelong learning to expand across the economy.

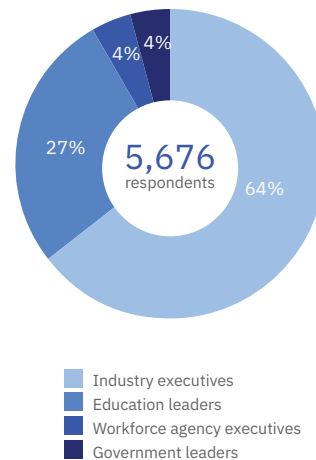
Geely leads the way in industry education, training

With its deep commitment to industry training, automotive manufacturer Geely Auto has been at the vanguard of higher education innovation in China. As part of its education and training initiatives, Geely has made significant investments to establish universities and colleges, such as Beijing Geely University, Hainan Geely Sanya College and Zhejiang Automotive Vocational and Technical College. With enrollments of more than 40,000 students, these institutes yield nearly 10,000 graduates a year, including some with bachelor's, master's and doctoral degrees. Successful graduates can join or rejoin the Geely organization across multiple business units and roles.¹³

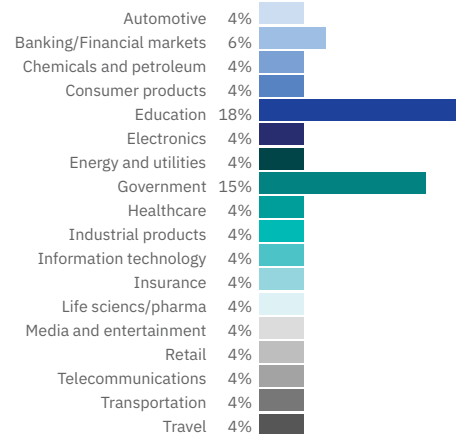
Study approach and methodology

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 Southeast 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.

Respondents by role



Respondents by industry



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Related reports

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