



Canada's comeback

Turning the skills crisis into a competitive advantage

Executive Report

Education

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Stoking growth with critical skills

After more than a decade of middling growth, Canada's economy grew at an annualized rate of 3.7 percent in the first quarter of 2017, significantly outpacing the 1.2 percent of real GDP growth in the United States for the same period.¹ Executives are optimistic about their business prospects, with many predicting both revenue and profit growth over 2016. However, Canadian leaders expressed deep concern about their ability to both find necessary skilled resources across labor markets and maintain the skills of current workers. To redress the skills challenge, both public and private sector ecosystem partners must work together.

The comeback

Canada's vast natural resources and skilled workforce enabled it to enjoy more than a decade of economic growth from 1993 to 2007. However, like most countries, Canada's economy experienced a downturn during the global financial crisis. In 2009, the Canadian government posted a fiscal deficit after 12 years of surplus.² Growth since has been middling. Canada's gross domestic product (GDP) was USD 1.67 trillion in 2016, with GDP growth lagging behind both the United States and Mexico.³

While Canada has weathered some hard times over the past decade, recent improvement in economic performance, coupled with increased optimism from economists and business leaders, suggest that Canada may be poised for a comeback. Some economists have even speculated that the Canadian economy could outpace the United States in 2017.⁴ Many Canadian executives appear less worried about the economy than they were just a year ago. Findings from the latest CPA Canada Business Monitor (Q1 2017) indicate that 38 percent of the business leaders surveyed are optimistic about the prospects for the Canadian economy over the next 12 months, up from 32 percent in Q4 2016 and a mere 22 percent in Q1 2016. Business leaders also expressed optimism over growth opportunities for their own businesses. Sixty-nine percent project revenue growth, and 63 percent project profit growth – both higher than 2016.⁵

**55%**

of Canadian industry executives surveyed cite **finding appropriately skilled workers in local labor markets** as a top skills-related challenge

**60%**

of all Canadian executives surveyed cite a **lack of collaboration between industry and academia** as one of the most fundamental challenges in skill development

**59%**

of all Canadian executives surveyed say **lack of motivation among individuals in the workforce** to proactively update and improve skills is a fundamental challenge

Our research indicates that Canadian executives identify multiple growth opportunities. Executives surveyed tell us that Canada can be a successful technology innovator to meet the needs of global markets, a global leader in research and development, and a producer of higher value-added products and services. Additionally, 39 percent identified being a global leader in sustainability initiatives and helping other countries fulfill their sustainability objectives as key strategic growth opportunities – an area which potentially has gained greater promise with the U.S. decision to withdraw from the Paris Climate Agreement.

To accelerate its path toward higher growth and capitalize on strategic growth opportunities, Canada needs a skilled and talented workforce. As such, the nation's future economic success is heavily dependent upon the ability of ecosystem partners to work together to develop and maintain a skilled workforce across regional labor markets. And addressing skills need must occur during a period of continuing industry and economic disruption fueled by rapidly evolving technologies.

The gathering storm

Digital technologies are fundamentally disrupting business and operating models. And this dramatic transformation is having 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 collaboration with Oxford Economics, surveyed more than 5,600 global executives in 18 industries and 48 countries, including 353 executives from Canadian organizations. (For more information, see “Study approach and methodology” on page 4.)

Our findings show massive changes occurring across industries worldwide. And Canadian executives share similar views with their peers from other countries about the ever-greater impact various disruptive forces are placing on the demands for workforce skills. Two-thirds of Canadian executives said advances in both general and industry-specific technology, expanded trade and global economic specialization will have a significant impact on the future demand for skills. More than half cited the impact of economic globalization, changing competitive pressures, changes in industry business and operating models, and changes in regulatory requirements. And 52 percent say advances in cognitive computing and artificial intelligence will have a significant impact on the types of skills demanded (see Figure 1).

Canadian executives also share similar views to executives elsewhere in terms of which skills are in highest demand, with the notable exception of science, technology, engineering and math (STEM) skills, which they rate much lower than their global peers.

Figure 1

Canadian executive views on what is fueling the storm

Factors impacting skills demand in the next 5 years



Source: IBM Institute for Business Value Global Skills Survey 2016 (n=353).

Study approach and methodology

In cooperation with Oxford Economics, the IBM IBV surveyed 5,676 global executives representing 18 industries and 48 countries, including 353 executives from Canadian organizations. Among the 5,676 were more than 800 leaders of government, including 314 executives from government organizations, 255 leaders from workforce development/public employment service agencies and 255 labor/workforce policy executives. 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.

Canada's comeback

This may be because more than two-thirds of them say that the quality of Canada's existing STEM skills is better than those of other countries. While technological capabilities remain at a premium, according to Canadian executives, other types of skills – soft skills – are also increasingly valuable (see Figure 2).

Figure 2

Canadian executive views on high-demand skills



Source: IBM Institute for Business Value Global Skills Survey 2016 (n=353).

Who shall lead us?

When we asked executives around the world who or what entity should take responsibility for developing workforce capabilities, we found that Canadian executives have much different views than their global peers (see Figure 3). They say secondary and higher education institutions and individuals should have a greater role than executives from other countries. Fewer of them say government should bear the most responsibility versus their global peers. Interestingly, a staggering 90 percent of U.S. executives say government should take the lead in addressing the skills issue, compared to 69 percent in Canada.

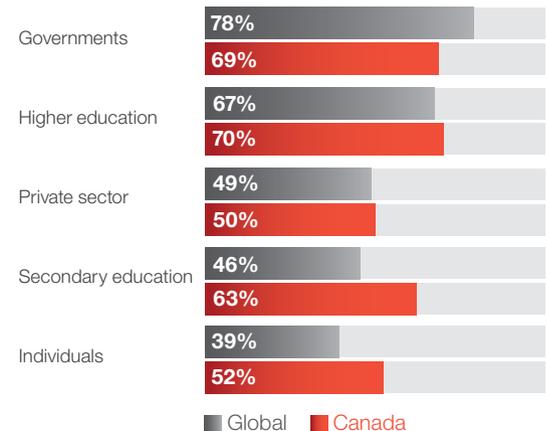
Canadian executives said that secondary schools should bear a significant responsibility in skills development and maintenance. This may be due to the fact that an overwhelming majority (71 percent) said that secondary education institutions succeed at preparing individuals with skills needed to compete upon graduation. Only slightly more than half of global executives share that view.

Canadian respondents were less optimistic than their U.S. peers about the ability of the education system to keep up with changes in curriculum. Only 59 percent said the current system succeeds at updating curricula and programs to keep pace with technological changes, and as few as 55 percent said it succeeds in updating curricula and programs to keep pace with industry changes. This compares to 77 percent and 71 percent of U.S. executives, respectively.

Around half of the global and Canadian executives surveyed say that the private sector should bear significant responsibility in developing and maintaining worker skills. And despite them having arguably the most at stake, half also identified individuals as having significant responsibility in maintaining and developing their own skills.

Figure 3

Who should be responsible for workforce skills development?



Source: IBM Institute for Business Value Global Skills Survey 2016 (global executive n=5,676; Canadian executive n=353).

Canadian executives were quite confident in the well-documented quality of skills in the nation's workforce, despite characterizing skill availability as relatively low.

Quality versus quantity

Our research revealed that Canadian executives rated the availability of skills within the country's workforce as relatively low compared to many other countries. However, they were quite confident in the quality of skills in the nation's workforce. This perspective on skills quality is validated by Canada's ranking in the World Economic Forum Human Capital Index. Canada ranks 9th among 130 countries in this index – far above the United States and Mexico, which rank 24th and 65th, respectively.⁶ There appears to be a sense in Canada that the quality of the current labor force is good – they just need more.

Sixty percent of Canadian executives say immigrants resulting from planned immigration have positively impacted the availability of skilled labor. And 66 percent indicate it has positively impacted skills quality, fully 13 percentage points higher than peers in the United States. Canadian executives' views on unplanned immigrants and refugees (including illegal immigrants) are much less positive than on planned immigrants and generally align with those of the United States. More than half of Canadian executives surveyed say recent immigrants pose at least some level of threat to the nation's economy.

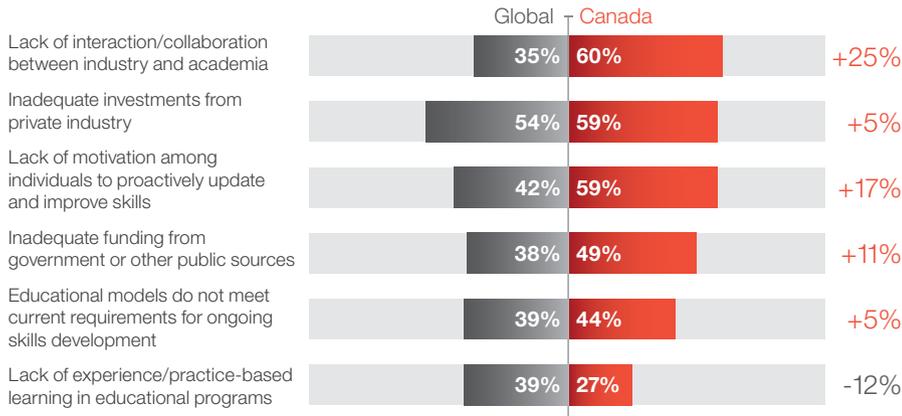
Clearing the hurdles

Significant roadblocks to solving the growing global skills crisis perpetuate. Half of the global industry executives surveyed cited a lack of appropriately skilled workers in local labor markets among their greatest skills-related challenges. Fifty-five percent of Canadian industry executives shared that same view. Paradoxically, when asked about quality and availability of critical skills, executives in our survey expressed great confidence.

They view lack of collaboration between industry and academia, a lack of motivation among individuals to proactively update and maintain skills, and inadequate investment from private industry as the greatest skills-related challenges in Canada (see Figure 4). These perspectives vary significantly from that of executives in other countries.

Figure 4

Most fundamental challenges in addressing skill development issues

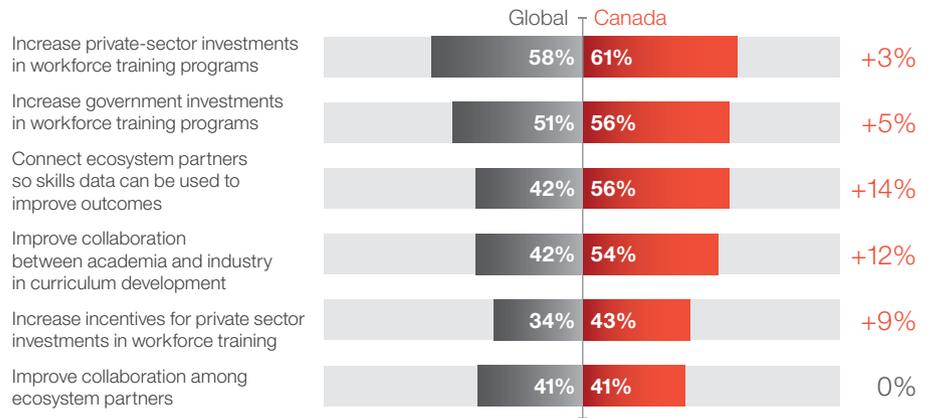


Source: IBM Institute for Business Value Global Skills Survey 2016 (global executive n=5,676; Canadian executive n=353).

Executives in Canada say that addressing these challenges will require increased investments, and improved collaboration and information sharing among ecosystem partners (see Figure 5). Like their global peers, executives in Canada say increased investments are required from both the private and public sectors. Forty-three percent of Canadian executives responded that the private sector should be incented to increase investments. And a majority said increased collaboration is required between ecosystem partners – with particular emphasis on sharing skills-related data and curriculum development.

Figure 5

What needs to be done to clear the hurdles...



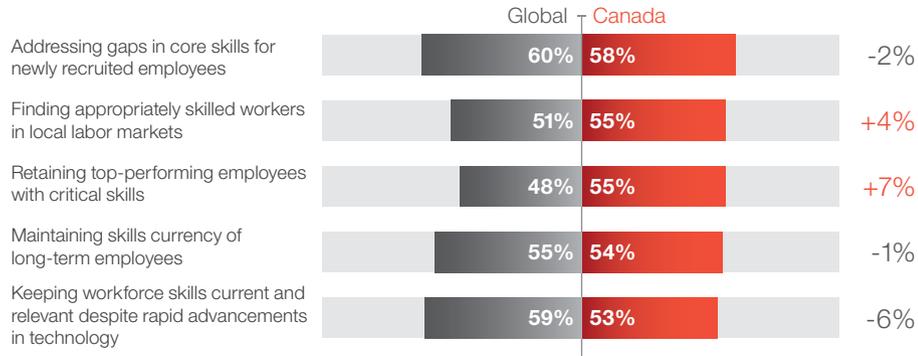
Source: IBM Institute for Business Value Global Skills Survey 2016 (global executive n=5,676; Canadian executive n=353).

Stakeholder groups in Canada's skills ecosystem cite multiple challenges and are taking various actions to address skills-related issues. However, there are differing and somewhat conflicting perspectives as to what needs to be done to clear these hurdles.

Canadian industry leaders noted multiple skills-related challenges in their organizations and share many of the same concerns as their global peers. They face challenges in not only finding and training new talent, but also in maintaining skills currency in long-term employees (see Figure 6).

Figure 6

Industry perspectives on skills-related challenges

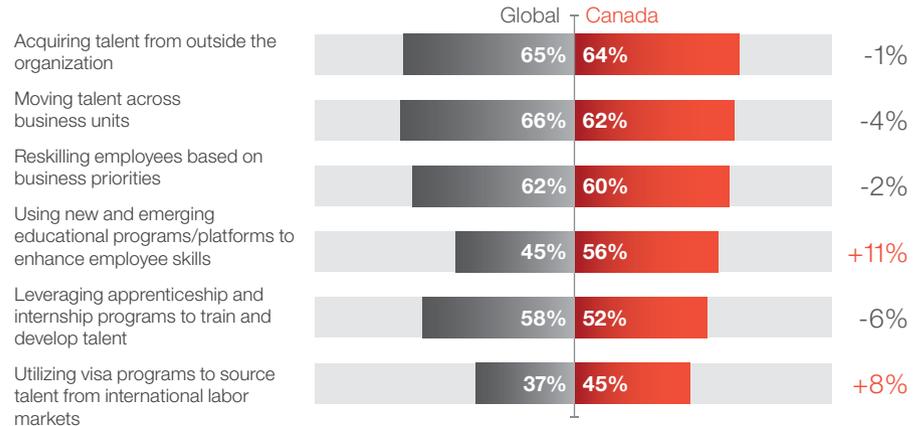


Source: IBM Institute for Business Value Global Skills Survey 2016 (global industry executive n=3,661; Canadian industry executive n=211).

Industry leaders in Canada have or are planning to implement a number of strategies to address challenges, including acquiring external talent, and moving and reskilling existing workers (see Figure 7). Industry leaders plan to leverage visa programs to source talent from abroad, and new educational programs and platforms, all at higher rates than their U.S. and global peers.

Figure 7

How industry is addressing these challenges



Source: IBM Institute for Business Value Global Skills Survey 2016 (global industry executive n=3,661; Canadian industry executive n=211).

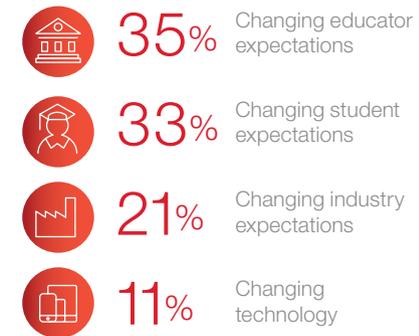
Education leaders in Canada have a more pragmatic view of the role of higher education than their global and U.S. peers. Seventy-four percent say the responsibility of their organization is preparing students with the skills they need for the workforce. Seventy-one percent said it's their role to prepare students to find relevant, full and long-term employment, and 68 percent to meet skills demands of industry. However, educational leaders say that educator and student expectations have driven changes to course curricula far more than industry expectations and changes in technology (see Figure 8).

Canada's education leaders intend to implement a wide variety of strategies to address skill-related challenges. More than two-thirds say they plan to focus on creating more opportunities for experience or practice-based learning. And only half say they plan to develop more personalized and targeted training programs and curricula, and develop and tailor programs to meet demands for life-long learning.

Only 37 percent say they intend to improve collaboration with ecosystem partners and only 42 percent say they plan to make curricula keep pace with technological change. The lack of focus on collaboration is particularly troubling considering the lack of collaboration among industry and academia was identified as the greatest challenge related to skills among Canadian executives surveyed. What's more, improving collaboration among ecosystem partners was one of the most critical strategies identified to address skills-related challenges.

Figure 8

Factors driving changes to academic course curricula



Source: IBM Institute for Business Value Global Skills Survey 2016 (n=106).

Paradoxically, the top two strategies that education leaders identified as most impactful were the two that they've de-emphasized as priorities for implementation. Seventy-seven percent indicated improving collaboration among ecosystem partners and 75 percent said updating curriculum and programs to keep pace with technological change as very impactful.

Eighty-five percent of Canadian workforce development leaders say they plan to focus on implementing policies to address skills-related challenges. Less than a quarter of workforce development leaders stated an intent to implement apprenticeship or internship programs, despite more than half of industry executives indicating they plan to leverage these programs to address skills-related challenges. And only a third of this group viewed these programs as having a positive impact, despite 98 percent of leaders globally rating them as impactful.

Canadian labor and workforce policy executives surveyed indicate bridge-building programs are at the top on their lists of planned strategies to address skills-related challenges. On a positive note, a majority of policy executives recognize the need to improve collaboration with stakeholders and indicate they plan to do so in the next five years. However, yet again, a disconnect exists with industry executives, as 45 percent indicated they plan to leverage visa programs to address skill needs, but only 30 percent of policy executives identified it as a planned intervention.

A playbook for the comeback

As industry, education, government and other public sector and non-profit leaders join forces to build a robust talent pool in regions across Canada, we propose that each stakeholder group embrace three high-level strategies:

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

Build and strengthen regional ecosystems

Building and engaging more effectively in ecosystems can help ecosystem partners accelerate establishment of new initiatives and innovation (see “Building a sustainable skills ecosystem”). 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.⁷

Leading organizations around the world recognize the benefits of active engagement in business ecosystems. For example, 69 percent of global industry executives from outperforming companies (those that rank highest in revenue growth and operating efficiency) indicate their organizations are already collaborating with ecosystem partners to address skills-related issues, as opposed to less than half of lower-performing businesses (see “Enabling individuals with hands-on career training”). In addition, 84 percent of global education executives surveyed said that improving collaboration among ecosystem partners has already had positive impacts, and 79 percent of workforce policy executives concur.⁸

Building a sustainable skills ecosystem⁹

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.

Enabling individuals with hands-on career training¹⁰

Nova Scotia's post-secondary institutions are working closely with industry to ensure graduates have the necessary skills to succeed in tomorrow's economy. In 2013, IBM opened its first Canadian Client Innovation Centre in Halifax, Nova Scotia with a commitment to create 500 high tech jobs in the province. In addition to experienced professionals, the Centre hires university graduates, and, through a formal five-year corporate training program and career development plan, transforms recent graduates into highly skilled technology workers with key skills including Agile, mobile and Java development, quality assurance testing, project management, and data security and privacy. Nova Scotia has focused on building the technical skills of its workforce and boasts 22 percent more students enrolled per capita in ICT related fields than the Canadian average. The high quality of talent and lower operating cost enables the region to remain competitive in the global IT services market.

Next steps to build and strengthen regional ecosystems

Regional ecosystem partners from government, education, industry and the non-profit sector must work together to:

- *Identify the right partners and empower orchestration.* Identify key partners from government, education, industry and the non-profit sector. 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. 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. 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 global skills research suggests the more impactful respondents deemed an initiative to be, the less they had adopted it. While concerning, this dichotomy points toward the need to prioritize new initiatives. And our research clearly shows that this trend also exists in Canadian organizations.

For example, Canadian educational leaders identified improving collaboration among ecosystem partners as the most impactful strategy in addressing skills-related challenges. However, only 37 percent of leaders indicated plans to implement strategies focused on improving collaboration with ecosystem partners. We also found a 46 percentage-point gap between perceived impact and adoption for implementing credentialing to recognize capabilities learned within the curricula and a 33 percentage-point gap for updating curriculum and programs to keep pace with technological change.

Opportunities also exist for Canadian leaders to collaborate and partner with organizations in other regions and countries that have already realized success (see “Building effective models that scale”). For example, 89 percent of U.S. educational leaders said creating more opportunities for experience or practice-based learning in educational programs has been impactful, compared to just 64 percent of Canadian educational leaders. And only about a quarter of workforce development leaders surveyed in Canada have or have plans to implement apprenticeship or internship programs, while 96 percent of workforce development leaders globally and 100 percent of workforce development leaders in such countries as Germany, Mexico, Japan and the United Kingdom have all stated these programs are impactful in addressing skills-related issues.

Building effective models that scale¹¹

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 diplomas and industry-recognized two-year post-secondary degrees. 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, N.Y., the model has expanded to more than 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.

Next steps to prioritizing proven, innovative solutions

Government leaders should assess opportunities to adopt strategies proven to be impactful by other government leaders globally and in other regions across the country, 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
- Creating “bridge building” work-based learning programs
- Expanding/enhancing immigration policies to allow for temporary and permanent visa programs for highly skilled workers.

Education leaders should consider adopting strategies shown to be impactful by other education leaders globally and in other regions across Canada, including:

- Creating more opportunities for experience/practice-based learning in educational programs
- Working with industry to update curricula/programs to keep up with technological change
- Improving relevance of content in educational programs
- Introducing credentials to recognize capabilities learned within the curricula.

Industry leaders should identify opportunities to:

- Partner with government and other ecosystem partners to create or expand apprenticeship or internship programs
- Implement formal skills recognition and/or certification programs.

Enable and advocate for individual responsibility

Approximately half of the Canadian executives surveyed say individuals should not bear a significant responsibility in developing and maintaining skills. Perhaps this is because they lack confidence in individuals taking responsibility for increasing their skills. Fifty-nine percent of respondents say that a lack of individual motivation to proactively update and improve skills is one of the most fundamental challenges of skills development.

However, little confidence exists that education systems are up to the task. Less than two-thirds of executives surveyed say the current education system in Canada provides programs to promote life-long learning and skills development. And although Canadian industry executives indicate they struggle with long-term skills development of employees, addressing the issue is not a high priority as only 58 percent indicate their business cultures support employee career development. Additionally, according to IBM Institute for Business Value benchmarking data, only 57 percent of organizations in North America surveyed indicate their human resources function effectively addresses and improves developing and deploying workforce skills and capabilities to match emerging opportunities.¹²

So, if individuals don't take responsibility for their own skills destiny, who will? Individuals cannot rely solely on governments, employers or educational institutions to plan their career paths and ensure they receive the education and training required to remain competitive over the course of their lives. This is just not feasible. Individuals need to take responsibility for their careers and lifelong learning paths.

But individuals cannot do it alone. They need tools and opportunities to chart their work future and continuously update skills throughout their lives. Public and private sector organizations 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 for sustaining a career¹³

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.

Personalized learning has long been a goal for educators. Advancements in sophisticated analytics and cognitive computing have driven progress toward this goal (see “Personalized learning for sustaining a career”). 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.

Next steps to enable and advocate for individual responsibility

Industry and education leaders will need 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 lifelong learning.
- Actively promote and educate individuals – both employees and students – about the importance of lifelong 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 workforce development programs and providing incentives for regional industry and education partners to develop programs and capabilities that enable lifelong learning.

Are you ready to strengthen Canada's workforce and skills ecosystem?

Globalization and technological advances are dramatically impacting required skills, and neither shows signs of slowing. Canada is positioned to return to a period of economic growth and the available labor force can either help accelerate or constrain economic evolution and growth. How leaders in the Canadian skills ecosystem respond will determine whether this evolution results in sustained economic prosperity or economic malaise. Ask yourself:

- What is your organization's strategy for keeping skills current and the workforce competitive?
- How are you working 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 region or organization?
- What is your plan to assist with engaging and coordinating ecosystem partners in your region or industry?

For more information

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Related IBM Institute for Business Value reports

King, Mike, Anthony Marshall and David Zaharchuk. "Facing the storm: Navigating the global skills crisis." IBM Institute for Business Value. December 2016. <http://www.ibm.com/business/value/skillsstorm>

King, Mike, Anthony Marshall and David Zaharchuk. "Pursuit of relevance: How higher education remains relevant in today's dynamic world." IBM Institute for Business Value. June 2015. <http://www.ibm.com/business/value/pursuitofrelevance/>

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