



Research Insights

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The enterprise guide to closing the skills gap

Strategies for building and maintaining a skilled workforce

IBM Institute for Business Value



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Talking points

Skilled humans fuel the global economy

Digital skills remain vital; however, executives tell us soft skills have surpassed them in importance.

Skills availability and quality are in jeopardy

The half-life of skills continues to shrink, while the time it takes to close a skills gap has ballooned. Organizations must find ways to stay ahead of skills relevancy.

Intelligent automation is an economic game changer

While executives recognize that advances in intelligent automation will bring multiple benefits, they also realize millions of workers may require retraining/reskilling. Most don't believe their organization or their country is prepared.

Organizational cultures are shifting

The digital era has introduced the need for a new business model, new ways of working, and a flexible culture that fosters the development of critical new skills.

How can organizations help close the gap?

Our research reveals that training and hiring are not enough. We explore strategies that show the greatest impact on closing organizational skill gaps and offer three key recommendations: make it personal, turn up the transparency, and look inside and out.

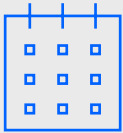
Introduction

Arguably, one of the greatest threats facing organizations today is the talent shortage. Executives recognize the skills gap. They know it's both real and problematic. But most of their organizations don't appear to be actively or effectively tackling the issue.

We've conducted significant research on the topic for years now – and we've found many organizations are merely running in place. Ironically, although executives recognize the significant threat the talent shortage poses, most organizations have not proactively attacked the problem. In fact, the vast majority have not moved beyond traditional hiring and training strategies.¹

Throughout economic history, talented humans have been a source of innovation and advancement – their skills the impetus for economic growth. Today, however, multiple factors, including continued – and rapid – technological developments and business and operating model innovation, have contributed to market shifts that are redefining industries. Combined with various economic and market disruptions, as well as significant demographic shifts in many countries, these factors have created a perfect storm that is affecting the value of, need for, and availability of workforce skills. The result is a looming global talent shortage with the power to severely impact individuals and economies worldwide.

The problem will not dissipate; in fact, it's increasing in severity. Global labor markets are only tightening, as unemployment rates continue to decline.² Compounding the issue, new skills requirements continue to emerge, while other skills are becoming obsolete. And it's all happening quite rapidly. As organizations scramble to meet their talent needs, many are making adjustments to their education and experience requirements just to fill roles.



More than 120 million workers in the world's 12 largest economies may need to be retrained/reskilled in the next 3 years as a result of intelligent/AI-enabled automation³



Talent is critical: CEOs rank investment in people as the #1 way to accelerate performance⁴



Hiring and training are no longer the only answers: The time it takes to close a skills gap through traditional training has increased by more than 10 times in the past four years, jumping from 3 days to 36 days⁵

In addition, as business platforms mature and companies continue to introduce new intelligent workflows to succeed on those platforms, the need for continuous reskilling in the workforce will be paramount to remain competitive.⁶ Hiring alone is not a sustainable solution to the talent crisis. Successfully navigating this new environment requires fundamentally reshaping how organizations manage skills, talent, and culture. And while reading and learning about creating agility in leadership teams and enterprises is helpful, it's more important to mobilize and begin to apply these insights to create positive change and adapt.

In this report, we offer a roadmap to guide executives toward action to address this critical issue. Our recommendations are based on insights from multiple IBM Institute for Business Value research initiatives, including surveys of thousands of global executives representing multiple industries in dozens of countries, as well as performance benchmarking data from hundreds of organizations globally.

Through research and analysis, we discovered certain skills development tactics that have a strong impact on closing skills gaps.⁷ We have crafted a set of recommendations based on the skill development tactics that have a strong impact on closing skills gaps: 1) personalization at scale, 2) increased transparency, and 3) leveraging the ecosystem. These recommendations leverage artificial intelligence (AI) to assist organizations in closing skills-related gaps.

The human factor: The strategic importance of skills and talent

The labor force has a significant impact on national and regional economic vitality. Without skilled workers, organizations struggle to innovate, deliver value to citizens and shareholders, grow their businesses, and create new jobs. In these circumstances, many private-sector organizations migrate to other regions in search of the workers with the skills they need to remain competitive.

A region's economic competitiveness and value proposition can suffer severely after a decline in the skills of the workforce. Regional economies lacking sufficient quantities of skilled workers struggle to retain and recruit industries that provide high-skilled and high-paying jobs.

Interest in skills development has extended beyond the Chief Human Resources Officer to the entire C-suite.

Regions left with mainly lower-skilled, lower-wage jobs can subsequently experience a drop in GDP, reduced tax revenues, and increased dependence on public services.

Despite the looming global skills crisis, executives see significant opportunities for their national economies, according to our 2018 Global Country Survey. They remain focused on global business integration and innovation, with more than half seeing potential to increase business value through deeper collaboration with global partners. In addition, 44 percent envision leadership in producing high-value-added products and services, suggesting they expect their nation to take a leading role in technological and business development. Other high-ranking opportunities include growing consumer spending and being a leader in sustainability efforts.⁸ The reality is these opportunities can't come to fruition without a skilled and talented workforce.

Executives grasp the critical importance of skilled workers, particularly when scouting locations for expansion. In fact, labor factors top the list of considerations for organizations making location investment decisions. Eighty-eight percent of executives cite labor costs, and the same percentage cite labor availability and quality as key elements in their decisions to grow and expand operations into new markets.⁹

Interest in skills development has extended beyond the Chief Human Resources Officer (CHRO) to the entire C-suite. CEOs have certainly registered the importance of workforce capabilities, according to our latest C-suite Study. After being on the back burner for a few years, people skills are among the top three external forces CEOs expect to impact the business, just behind technology and market factors.¹⁰

Clearly, executives across the enterprise are waking up to the criticality of talent and the negative impacts associated with a skills gap. Skills can have a direct impact on the level of returns organizations realize from investments. For example, the risk of an IT project failing to meet its objectives can rise when the project team does not have the appropriate skills.¹¹ This is true beyond IT; team skills have a significant impact on achieving project objectives.

Data from our C-suite Study further underscores the benefits of skills-related investments. Nearly two thirds of the Reinventors – organizations that outperform in profitability, revenue, and innovation – agree that focusing on compelling employee experiences such as workforce learning has a direct impact on customer experience. It's not surprising, then, that 72 percent of these leading companies report that they invest continuously to improve employee skills.¹²

Which skills matter most?

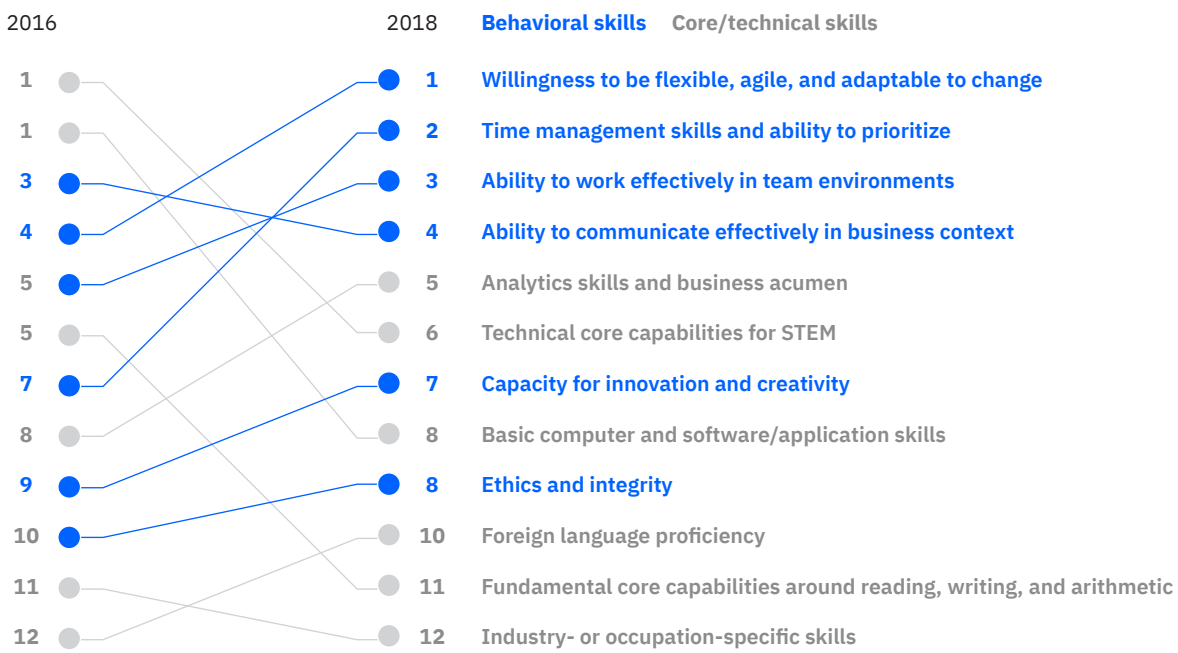
Executives' responses indicate workers require a blend of both digital skills and soft skills – also called behavioral skills – to be successful in the workforce. As we revealed in our 2016 report on global skills, "Facing the storm," executives have placed a high value on digital skills. In fact, the report indicates that six in ten cited fundamental and advanced technical capabilities in math, science, and computing as their most sought-after workforce capabilities.¹³ Our latest research reveals that a shift is occurring; executives' views regarding the priority of critical skills have taken a turn from digital and technical to behavioral. In 2018, soft skills dominated the top four core competencies global executives seek (see Figure 1).¹⁴

Why the growing importance of behavioral skills? A number of factors are likely at play. The last few years have been marked by significant investment in technical skills. Indeed, entirely new areas of expertise, such as data science and machine learning, have saturated nearly every industry in a new business environment laden with powerful technology. While organizations still struggle to address gaps in technical skills, there have been significant efforts and investments to address these gaps at multiple levels to lessen the impact on organizations.

Executives are now tasked with continuously innovating and succeeding in this constantly evolving landscape. And they recognize that navigating it requires individuals who can communicate effectively, apply problem-solving and critical-thinking skills to drive innovation using new technologies, and draw and act on insights from vast amounts of data. It also calls for creativity and empathy, an ability to change course quickly, and a propensity to seek out personal growth. Expectedly, teamwork and organizational flexibility top executives' list of most important attributes for successful innovation.¹⁵

Figure 1

Executives now point to behavioral skills as the most critical for members of the workforce today



Sources: 2016 IBM Institute for Business Value Global Skills Survey; 2018 IBM Institute for Business Value Global Country Survey.

Until recently, companies taught or conditioned employees to operate in alignment with their business model – in a structured, process-oriented manner. Top-down decision making, organization of work into defined tasks, job descriptions with set responsibilities, progression of functional skill depth versus breadth, and the use of fixed teams have taught employees a certain set of skills that come to life in a company’s culture. Until the digital era, clarity of mission had been best communicated, structured, and executed in a stable environment that was not experiencing constant change. The digital era introduced the need for a new business model with new skill requirements, new ways of working, and a more flexible culture.

The digital era has provided the opportunity and the need for speed – and that, in turn, has led to new ways of working. Remote working, always-on access, transparency, less hierarchy, pop-up teams operating across functional and organizational boundaries, and organizations operating within an ecosystem of partners all require a cultural of agility and, in turn, new skills for the workforce.

Not surprisingly, different management styles are required as well – ones that encourage an agile work environment that includes autonomous decision making, work product iteration, experimentation, peer-to-peer coaching, and flexible team structures. Essentially, cultures and organizational competencies need to shift to reflect these new ways of working and facilitate the training and conditioning of a workforce with new skills.

The recognition that behavioral skills are critical for organizational agility and adaptability is not a new idea. In fact, it was introduced as the Adaptability Quotient, or AQ, several years ago. AQ measures the ability to adapt and thrive in a fast-changing environment.¹⁶ Our research demonstrates that at this point in time, the gap in adaptability has reached a critical stage. Therefore, innovative strategies are required to address behavioral skills gaps.

Organizations must embrace the fact that learning is a lifelong journey. While lifelong learning has always been critical, our digital world now requires new ways of working, which makes lifelong learning a must to the long-term success of organizations and individuals.¹⁷ As such, organizations should consider the propensity to learn as a top skill in employees. The propensity to learn and embrace lifelong learning should be encouraged and empowered by organizations and considered key requirements in hiring.

In addition to focusing on the learning propensity of workers, organizations must also broaden their hiring strategies beyond traditional methods of seeking college education degrees and former job experience. Organizations should be looking beyond traditional candidates to take advantage of two critically important talent pools that possess those behavioral skills that are imperative to success in the workplace: Mid-career and “new-collar” workers.

Executives have clearly stated the increased importance of behavioral skills. These skills are developed through practical, real-world experience. Many mid-career workers – those typically between the ages of 35 and 45 years old – often bring a wealth of real-world experience and possess many of the behavioral skills employers deem critical to be successful in the workforce. Like all workers, mid-career workers will require continuous learning, and some may require additional training to address minor gaps in technical or digital skills.

IBM Chairman Ginni Rometty coined the term “new collar” in response to the growing number of competitive jobs in economic growth fields that require more than a high school diploma, but not necessarily a bachelor’s degree. These jobs emphasize academic and technical skills, along with professional competencies such as critical thinking, collaboration, and communication.¹⁸

The hiring strategies for selecting new collar workers involve looking beyond the information on the resume and seeking potential over experience. While many next-generation jobs will require traditional university backgrounds, many still will fall under the category of new-collar jobs, requiring less than a four-year degree. In areas ranging from cybersecurity to digital design, organizations have the opportunity to tap into non-traditional labor pools to access needed skills.

The Pathways in Technology Early College High Schools (P-TECH) model is focused on preparing students for new-collar jobs. In addition to preparing students with critical technical skills in demand by employers, the model also provides real-world, practical experience through internships to provide students with the behavioral skills that will prepare them to succeed in the workplace (see sidebar, *The P-TECH experience*). Apprentice and internship programs have proven effective in addressing skills gaps. In our research, we found that nearly all (96 percent) of the surveyed workforce development/public employment services executives indicated apprenticeship and internship programs were impactful in helping to close skills gaps.¹⁹

The P-TECH experience²⁰

The Pathways in Technology Early College High Schools (P-TECH) Model is a new public education paradigm. Within six years of starting ninth grade, P-TECH students can graduate with both a high school diploma and an associate degree. The degrees are in fields that have weight in the twenty-first-century economy, such as IT, healthcare, and advanced manufacturing. Better yet, students gain skills and real-world experience to continue their studies or step into well-paying new-collar jobs.

Formative experiences early in one's life help create the adaptability to change skills later in life. Simply put, it's easier for people to adapt to new styles of working when they are accustomed to adapting to change. This adaptation can also be learned and reinforced through ways of working that embrace change as the norm.

The struggle is real: Current skills challenges

Data has been referred to as the new natural resource, with an article in *The Economist* going so far as to say it has replaced oil as the world's most valuable resource.²¹ Ultimately, however, humanity is at the heart of the enterprise – and without talented and innovative people, the power of data remains dormant. Humans are essential to extract value from data and apply it in innovative ways. The availability and quality of these critical human resources are under stress. And the shortage of skilled workers is only expected to grow. By 2030, the global talent shortage could reach more than 85 million people.²² To be clear, the issue is not a shortage of workers – but a shortage of *workers with the right skills*.

According to a 2018 report on the talent shortage's impact on employers, 45 percent of organizations can't find the skills they need. For large employers, the percentage is even higher at 67 percent. Almost a third of employers say the main reason they can't fill roles is a lack of applicants, while 20 percent say applicants don't have the necessary experience. More than a third are adjusting their education and experience requirements to fill positions.²³

Exacerbating the issue, the rate at which professional skills become obsolete is increasing. The half-life of professional skills was once estimated at 10 to 15 years, meaning that the value of those skills would decline by half – or half the knowledge associated with the skills would become irrelevant – in a decade or so. Today, the half-life of a learned skill is estimated to be five years and even shorter for technical skills, meaning a skill learned today will be about half as valuable in just five years or less.²⁴

A look at our historical data reveals another alarming trend: It's taking longer to close skills gaps with traditional training approaches like classroom and virtual learning. Globally, in 2014, the median time it took to close a capability gap through training in the enterprise was three days. In 2018, the median was an astonishing 36 days. In just four years, the time to close a skills gap increased by more than a factor of 10.²⁵

What led to this enormous increase in time? There are likely a number of contributors. For example, some of the skills required today take longer to learn because they are behavioral, such as teamwork, communication, creativity, and empathy. These skills are best developed through real-world experience rather than structured learning programs. Other new skills take more time to acquire because they are highly technical (such as data science capabilities). Also, many of the skills themselves are changing rapidly, making it hard to stay on top of the latest requirements.

In addition, an individual's behavioral skills start forming early in life through childhood experiences and are later strengthened in their working lives. They are influenced by organizational culture – a culture that, until the digital era, was largely structured and founded in efficiency. Learning new behavioral skills requires an organizational culture shift, with employees adapting new ways of working to encourage that shift. This is no easy task, as evidenced by the ten-fold increase in time to close enterprise skills gaps when using traditional approaches.²⁶

The tight labor market is also a factor as employers are forced to focus on building and maintaining critical skills in their existing workforce rather than continually sourcing new skills from outside the organization. In addition, the way the workforce approaches learning has evolved. Expectations among learners for curated, on-demand, multi-channel experiences have some enterprises struggling to meet their rapidly changing skilling requirements.

The reality is that human resources (HR) executives and other business leaders are tasked with juggling the demands associated with recruiting scarce talent while simultaneously finding ways to motivate and engage the workforce to continuously skill and reskill in a culture of exponential learning.²⁷ CHROs from our C-suite Study tell us hiring remains an important mechanism to address the skills issue; however, because the required skills change at such a rapid rate, it's difficult to keep pace through hiring alone.²⁸

Despite attempts to balance hiring with training, large capability deficits remain. Only 41 percent of organizations from our C-suite Study have the people skills and resources required to execute their business strategy.²⁹ The good news is that executives clearly agree on the criticality of skills, and many are effectively working to close gaps. The troubling news is that while most remain daunted by addressing current skills needs, one factor further complicates the challenge for organizations: intelligent automation.

Intelligent automation: An opportunity... and a challenge

An economic game changer

Throughout history, automation has represented an opportunity to create new value from the balance of the classic paradigm of people, process, and technology. Automation of data-driven enterprise tasks started in the 1960s with the introduction of enterprise resource planning systems and has evolved to include robotic process automation (hence the term “bots”). Today's robots are capable of much more than routine actions and tasks. They are adaptive and able to alter their responses as the environment changes.

Advancements in AI are spawning a new phase of automation: intelligent automation. Intelligent automation incorporates recent advances in AI and other technologies to manage and improve both physical and digital business processes automatically and continuously. Intelligent automation is transforming the way humans interact with and benefit from technology. It is also helping organizations create new personalized products and services, improve operations, reduce costs, and elevate efficiency.

Insights from C-suite executives indicate tremendous optimism regarding the benefits of intelligent automation to their industries and their organizations. Almost 60 percent of executives from our 2018 Global Country Survey say advances in intelligent automation will expand organization capabilities, and 59 percent anticipate industry productivity improvements. Just under half (45 percent) expect their industry to benefit from increased insights from data, while 43 percent predict improved worker productivity.³⁰

“I expect AI to change 100 percent of jobs in the next five to ten years.”³¹

Ginni Rometty, IBM Chairman, President, and CEO

Intelligent automation is guided by AI tools that need minimal manual routine interventions. It enables processes to perform in ways that optimize the amount of human support needed. This operational shift – moving the burden of processes from humans to technology – augments human capabilities and builds efficiencies while enabling digital operations and innovations. As more tasks are performed by process automation, humans are free to engage in higher-value tasks.

As AI and intelligent automation have been hyped by media, much of the rhetoric has focused on doomsday predictions of massive job losses. However, modified predictions regarding AI’s impact on the workforce are changing the narrative. For example, Gartner predicted that by 2020, AI will actually create more jobs than it eliminates,³² and it cited the talent shortage as the top emerging risk facing organizations today.³³

The workforce and skills impact

In addition to considering the impacts on and improvement opportunities for their organizations’ processes and operations, executives also ponder how intelligent automation will influence their workforce needs. Industry productivity improvements – which more than half anticipate – will likely trigger shifts in the labor force. Sixty-seven percent of executives expect advancements in automation technology will require roles and skills that don’t even exist today. Most executives expect to feel the pressure sooner rather than later: Almost two-thirds predict that robotic, AI, and automation innovations will influence skills demand in the next five years.³⁴

There’s no denying that intelligent automation will have a tremendous impact on workers. In our 2018 Global Country Survey, we asked executives to estimate what percentage of their headcount would be reduced or redeployed as a result of intelligent automation. Based on their answers, we estimate that up to 60 million workers

in the world’s largest 12 economies – 3.4 percent of the workforce – might be reduced or redeployed to other roles by employers in just the next three years.³⁵

Perhaps even more critically, though, the application of intelligent automation will also have a deep and urgent impact on skills requirements, compounding an already significant challenge. We asked executives to estimate what percentage of their workforce will need to be reskilled or retrained as a result of intelligent automation. By applying their estimates to national labor force data, we determined that more than 120 million workers in the world’s 12 largest economies might require retraining or reskilling in the next three years. For perspective, consider that this number is larger than the entire labor forces of Canada and Brazil combined.³⁶ To keep pace with the skills crisis, it’s clear that leaders must focus on retraining and reskilling workers rather than replacing them.

Equally concerning, many executives say their nation is not equipped to handle the effects of advanced intelligent automation. For example, although almost half of executives agree that vocational training is among the most important ways to prepare for advances in intelligent automation, only 28 percent say their nation is prepared to provide it.³⁷ And only a quarter of executives tell us their nation is adequately prepared to provide reskilling and retraining opportunities for displaced workers.³⁸

In addition, many executives tell us it’s not the enterprise’s responsibility to provide reskilling and retraining. According to a recent survey on AI and ethics, only 38 percent of CHROs say their organizations have an obligation to retrain or reskill workers impacted by AI technology.³⁹ If nations aren’t prepared for the challenges associated with adopting intelligent automation and most CHROs don’t believe reskilling is the organization’s responsibility, what is the path forward?

Closing the gap: Strategies and recommendations

To be sure, solving the skills challenge is no easy task. It will require concerted effort and action across an extended network of entities including industry, education, public policy, and economic development leaders. However, organizations must take the lead, moving beyond hiring and traditional training initiatives and committing to continuous, strategic exploration of new paths.

Regrettably, this is not yet happening. We provided a list of strategies and tactics and asked executives which they were implementing to actively close their skills gap (see sidebar, *Tactics to close the skills gap: What are*

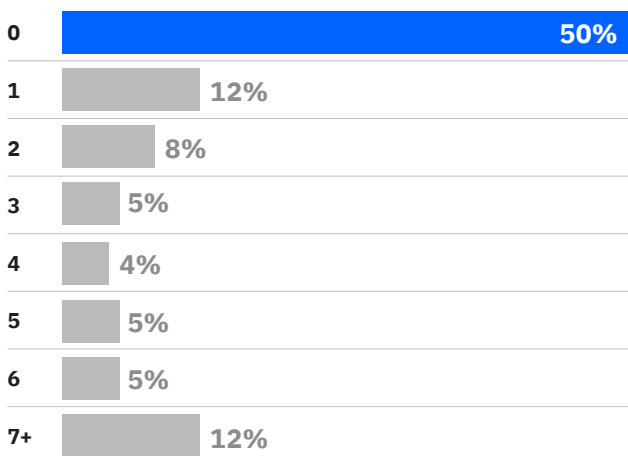
executives using?). We discovered that only 50 percent are using any strategy at all (see Figure 2). And among those that are actively trying to solve the issue, there appears to be a sense of cautious uncertainty: The highest percentage of organizations are still relying on only one approach, most notably hiring. Others are experimenting with combinations of tactics, yet still depending heavily on mechanisms like moving people and training.⁴⁰

Looking forward, the news is better: Executives are preparing to boldly meet the skills challenge head-on, with the number of organizations planning to act jumping to 83 percent.⁴¹ However, the path forward remains unclear. What combination of traditional and emerging tactics will help organizations tackle the skills challenge? Where should organizations invest their time and money?

Figure 2

Half of the executives surveyed say their organizations are not pursuing any skills development strategies today

Number of skills development strategies organizations are pursuing today



Source: 2019 Open Standards Talent Development Benchmark Study. IBM Institute for Business Value Performance Data and Benchmarking.

Tactics to close the skills gap: What are executives using?

- Acquire talent from outside the organization
- Move talent across business units and divisions
- Reskill employees based on business priorities
- Leverage visa programs to source international talent
- Leverage apprenticeship/internship programs to train talent
- Leverage new and emerging educational programs/platforms to enhance employee skills
- Apply analytics to analyze and predict skill supply and demand
- Implement skill recognition initiatives to recognize and track skills progression
- Leverage talent through ecosystem partners

Source: 2019 Open Standards Talent Development Benchmark Study. IBM Institute for Business Value Performance Data and Benchmarking. Q: Which of the following strategies and tactics has your organization implemented or planned to implement?

Traditional approaches are no longer enough: The talent crisis requires exploration of new paths.

We examined the myriad tactics with which organizations are experimenting to better understand if any in particular are highly impactful on closing organizational skills gaps. Topping the list are applying analytics to predict and infer skills supply and demand, implementing skills recognition initiatives, and leveraging new and emerging education.⁴²

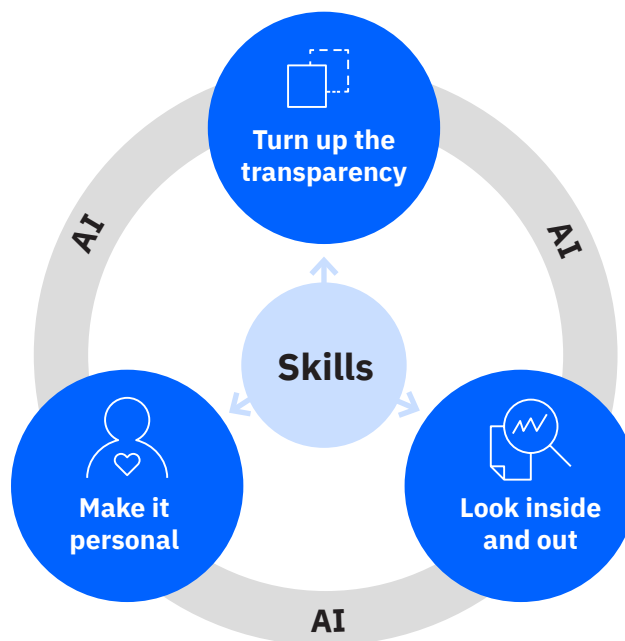
Indeed, these particular tactics so highly align with executive sentiment and the current business landscape that, at first glance, their rankings in our analysis may seem self-evident. For example, leaders tell us that motivation for individuals to proactively update their skills is a key barrier to skills development, and skills recognition programs could provide the incentive employees need, inspiring them to take the initiative.⁴³ Similarly, for executives keen to expand their learning partnerships to academia and industry, leveraging new education programs like code schools is an obvious strategy.⁴⁴ In addition, massive fluctuations in critical skills and continually shifting skills demands make AI-based real-time skills inference a formidable asset.⁴⁵

Yet these tactics remain surprisingly underused – they are, in fact, the least used today. Why? The answer may be that these emerging tactics are not one-size-fits-all, plug-and-play solutions suitable for every enterprise. Rather, they are signposts for positive action that is continuous, analytical, and strategic.

From these emerging tactics, then, three key actions surface as critical to the skills conversation, each of which is exponentially strengthened by AI (see Figure 3). Organizations should consider how best to apply each of these within the context of their unique culture, workforce, leadership, and business strategy.

Figure 3

Skills at the core: AI can help enable transparency and skills personalization in an expanded learning ecosystem.



Source: IBM Institute for Business Value analysis.

Three recommendations for closing the gap

1. Make it personal

Personalization has become part of everyday life in the consumer world. Whether searching for a restaurant or a new product, consumers expect instant and personalized search results. They also expect their favorite sites to proactively offer suggestions tailored to their preferences. One size no longer fits all. Employees expect the same personalized experience in their work world. Employees want career, skill, and learning development uniquely tailored to their experiences, goals, and interests. Companies also want personalization. Employee skill and learning experiences that are tailored both to customer and market needs and to employee goals and interests can help retain the best and brightest and build a future workforce.

To make an organizational impact with the speed required to be competitive, companies must personalize “at scale.” This means going further than segmentation of employees in the same job roles... or in the same business units. It means understanding the current skills of each and every employee, knowing where the corporation and the individual want or need to progress, and personalizing a learning and career path. AI can help enable this level of personalization and bring a meaningful employee experience to life.

Companies should take time to understand the needs of the market, the business, and their workforce, creating deeply personalized skilling experiences that are served up in the flow of work. Some organizations are leveraging AI to tailor employee notifications, learning paths, and content to fit both business and individual needs.

Companies are also looking beyond traditional learning methods, growing skills in different ways for different learning styles, with programs that encourage internal job mobility, ad-hoc projects, peer-to-peer learning, job shadowing, and coaching. Most importantly, companies are fostering a culture of perpetual learning, personalizing the parts of the employee lifecycle to build, grow, and reward continual skill growth.

CNM embraces blockchain for skills transparency⁴⁶

One example of an organization making it really personal is Central New Mexico Community College. Digital badges provide a powerful, engaging way to gain and share validated skills and provide transparency into the skills that are most valued in the market. CNM uses blockchain technology to take this transparency a step further.

Graduating students from Central New Mexico Community College earn a diploma, as well blockchain-powered digital credentials, which they can access and send to prospective employers using a smartphone app. The blockchain credentialing system provides prospective employers with the transparency of verified skills. It provides employees with a personalized skilling and job placement experience that helps students identify their career goals and “skill up” to achieve them.

The power of transparency plus personalization at IBM

With the rapidly changing digital business environment, IBM shifted close to 50 percent of its portfolio to new products and services – and was forced to tackle the skills challenge head on. To manage its skills demands with the speed required by the market and at the scale of a company the size of IBM, transparency, personalization, and AI were core to success.

Today, using advanced analytics and AI, an employee’s digital footprint is scanned to infer current skills and skill depth, and the results are openly shared with the employee. Personalized, continual skilling recommendations are then served up in the flow of daily work. IBM signals the constantly changing skill demand by transparently sharing the roles and skills that are growing – and declining – in market demand; providing a personalized learning and skills environment with curated job opportunities, learning, and digital badges; and encouraging open manager/employee career conversations that go beyond performance to skill relevancy and skilling goals. Today, eight out of ten IBM employees are equipped with the skills required for the future, compared to three out of ten less than five years ago.

2. Turn up the transparency

Stop operating in the dark – place skills at the center of your people strategy and aim for deep visibility into the skills position across your enterprise. A skills-based people strategy requires solutions that go well beyond understanding the number of people in a specific role. Advanced analytics, AI, machine learning, and market-based skill data have shifted the conversation to one about obtaining actionable, often predictive, insights – at scale – and then making these insights available to everyone, from individual employees to enterprise business leaders.

Leading companies are transparently signaling to employees the roles and skills that are growing in market demand and providing employees with engaging, meaningful ways to grow their skills in the areas that matter most, demonstrate their skill proficiency, and be recognized for doing so. This new level of transparency provides employees with information to self-direct their learning and career choices – information that is much needed to stay ahead of the shrinking half-life of skills.

In 2013, AT&T initiated a massive retraining effort after discovering that nearly half of its 250,000 employees lacked the skills needed to keep the company competitive.⁴⁷ Core to their strategy? Transparency. AT&T started a dialogue with the workforce about the importance of skills and skills relevancy and now provides a robust portfolio of programs and tools for employees to continually gain new skills.⁴⁸ In addition, companies including Ernst & Young, Banfield Pet Hospital, and IBM are applying analytics and AI to traditional and new data sets to infer what skills are available within the organization – and what skills the company should proactively retain – with significant granularity.⁴⁹

This approach assesses and measures the skills – and skills depth – of the workforce on a regular, automated basis. The outcome is a transparent, objective, reliable skills baseline to monitor a company’s skills position over time and provide needed details for targeted workforce planning. Companies are also using this information to inform a skills/learning platform that provides top-to-bottom visibility into the existing skills of the workforce, connects the right resources when they are needed most, and drives the personalized learning experience.

AT&T empowers employees with job trend data⁵⁰

AT&T employees have access to a career intelligence tool that helps them make self-directed, informed career decisions by analyzing hiring trends within the company. For example, employees interested in a U.S.-based network services job could determine that in 2015, AT&T offered nearly twice as many of these positions as it had in 2012. They could also see that information technology roles trended down by more than 200 jobs during the same period. This tool also provides links to options for developing their skills developed through a partnership between AT&T, Udacity, and Georgia Tech.

“Our most important priority in HR is finding talent for the future, not just for now. We’re focused on the formidable challenge of attracting, developing, and retaining employees with skills we haven’t yet determined.”

CHRO, Banking, New Zealand

3. Look inside and out

Gone are the days when any one company had all of the answers. Gone, too, is the ability to solution the skills challenge without the partnerships of broader internal and external ecosystems. To remain competitive, companies must adopt an open technology architecture and a set of partners able to take advantage of the latest advancements. Culture shifts are required to welcome third parties as part of the team, embrace partners to manage specific internal functions, and prepare for an integration of data across the enterprise and ecosystem not experienced to date – yet vital to success. To prepare, companies should leverage a hybrid cloud approach to enable open flexibility and securely enable data integration.

Inside the organization, build agile teams with heterogeneous skillsets to enable experiential, peer-to-peer innovation and create a culture where learning becomes viral. Create opportunities for job sharing and internal mobility that focus on skills development. Work across HR organizational boundaries to connect the dots, making skills the anchor point. Identify the key skills needed for success and align your future skilling strategy throughout the entire employee lifecycle – from recruiting, to team formation, learning, career coaching, compensation, and retention. Share skilled talent across organizational boundaries.

Across the external ecosystem, engage a coalition of partners to continually explore and pilot innovative skills gap closure strategies. A wide variety of companies – from Walgreens to Wendy’s, IBM, and the Ventura County Fire Department – are leveraging learning content curated from highly skilled content providers.⁵¹ In addition, invest in innovative skill-building technologies. Harness the power of initiatives such as massive open online courses (MOOCs), code schools, and industry expertise networks. Apply AI to source and harmonize the most relevant educational assets for your learners.

A call to action

The skills shortage doesn’t show any signs of easing up, and the heat is on for organizations to actively address the challenge both now and in the future. Closing the global skills gap will require collaboration across ecosystems that span industry, education, and government.

Executives can start today by committing to a modern workforce strategy that places skills at the center, delivers deep visibility into the skill position of both the enterprise and individual employees, personalizes skills development at scale, and leverages new partnerships and platforms that integrate data and insights across the employee lifecycle. The status quo is not an option. The time to act is now.

CEMEX grooms digital talent for the future⁵²

CEMEX, a global cement and heavy construction material company, partnered with IBM and a leading university to educate top management on digital transformation. The company also aimed to develop agility in its leadership ranks, as well as curiosity about the opportunities that technology could unleash. As part of the initiative, CEMEX established the Monterrey Digital Hub, a co-working space aimed at attracting and developing new digital skills for the next generation of talent and entrepreneurs.

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How IBM can help

Leaders must reinvent culture, skills, and experiences using intelligent workflows to optimize process and augment business decisions. Reinvention of your enterprise requires a focus on organizational development — improving all the ways your employees interact with customers, the business, and each other. Whether you use Workday, Oracle, SAP, or another HR tool, IBM has experts ready to help your organization manage change. Using AI, automation, new talent technologies, and the expertise of IBM, you can hire the right people and keep their skills sharp. IBM can guide your talent evolution toward a cognitive enterprise. Learn more at ibm.com/services/process/talent.

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