Bridging the Global Talent Shortage: Opportunities for Assessment & Upskill Providers in the Age of AI

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Introduction

The global talent shortage is a persistent and rising challenge with significant economic implications. Fourteen G20 countries could miss out on $11.5 trillion in cumulative GDP growth due to this shortage. Closer to home, by 2030, the talent shortage and skills gap in the U.S. alone is expected to result in a loss of $8.5 trillion (about $26,000 per person). These figures highlight the urgency of addressing the disparity between the demand for skilled professionals and the available workforce with the necessary competencies. Understanding the causes of this shortage is crucial to developing effective strategies to bridge the gap.
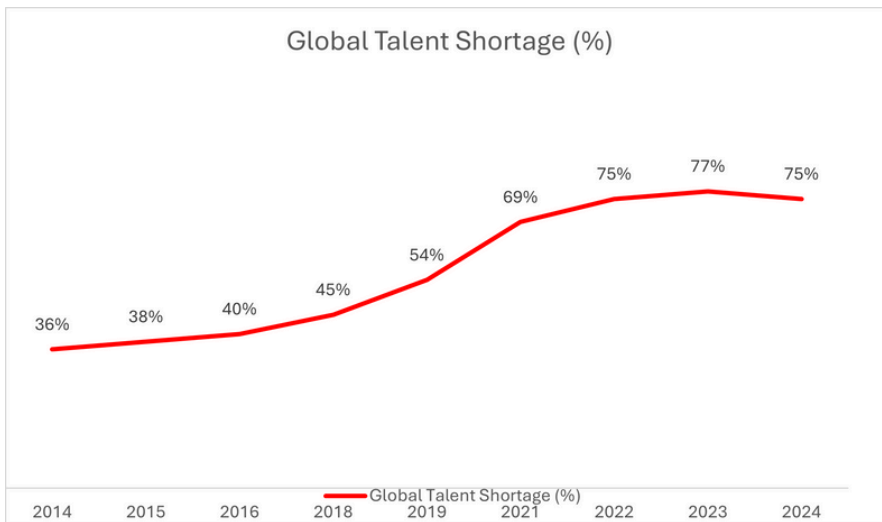
Source: Manpower Group, 2024

To tackle this challenge, Emerging Strategy extensively researched the essential skills required in AI-driven industries. Our findings draw heavily from research we recently undertook on integrating advanced mathematical methods into industry and science. This initiative included comprehensive interviews with Learning and Development (L&D) professionals across various STEM fields, highlighting the vital soft and hard skills —such as data management, engineering design, and process optimization—necessary for career growth. These insights are further reinforced by secondary research from reliable sources, ensuring a thorough and well-rounded analysis.

Understanding the Root Causes of the Skills Shortage

The global skills shortage is not a singular issue, but a complex challenge influenced by multiple factors. To effectively address this growing problem, it is crucial to understand the underlying causes of the current gap between workforce capabilities and industry demands. Here are four factors we identified:

Mismatch Between Education and Skill Needs
Educational institutions often struggle to keep pace with the rapidly evolving demands of the job market, especially in technology-driven industries. In the United States, for example, there is a significant gap between the skills taught in schools and the advanced technical expertise required in fields such as AI and cybersecurity. Similarly, despite a large and youthful workforce in India, there is an urgent need to enhance digital literacy and technical skills to meet industry requirements.

Population Aging
In countries like Japan, an aging population has resulted in a substantial portion of the workforce retiring, creating a labor shortage that younger generations are not filling quickly enough. This demographic shift is further exacerbated by increased life expectancy and declining birth rates, leading to a shrinking workforce in critical sectors such as healthcare and technology.

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Rapid Technological Advancements

The rapid pace of technological innovation, particularly in automation and AI, is transforming industries and creating a demand for new skill sets in areas like machine learning and robotics. While these advancements drive progress, they also render some traditional jobs obsolete. In the U.S., there is a persistent demand for STEM professionals to keep up with these changes, while India is emerging as a key player in the technology sector, driving demand for skills in AI, data analytics, and software development.

**Increased Reliance on AI and Data Science**

Globally, industries are increasingly adopting AI and data-driven strategies to enhance operational efficiency, improve decision-making, and maintain a competitive edge. In India, initiatives such as "Digital India" and "Skill India" aim to address these needs by promoting digital skills across the workforce. Meanwhile, Japan's leadership in robotics and automation underscores the growing demand for specialized engineering skills to support these high-tech industries.

Key Sectors Impacted by the Talent Shortage
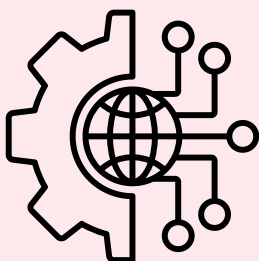
TECHNOLOGY
The rapid pace of digital transformation has led to an unprecedented demand for software developers, data scientists, cybersecurity experts, and AI specialists. These roles are critical for driving innovation and safeguarding businesses against the ever-evolving landscape of digital threats. Companies that fail to secure this talent risk falling behind in innovation and security, vital to maintaining a competitive edge.
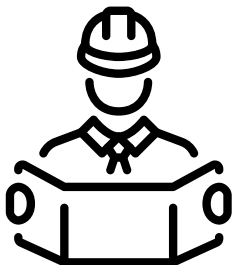
ENGINEERING & MANUFACTURING
Advances in automation and intelligent manufacturing technologies have reshaped industry demands, requiring engineers and production managers to be adept with the latest technical skills. Continuous adaptation is crucial to ensure that operations remain efficient and competitive. The shortage in this sector is particularly concerning as it hampers the industry's ability to integrate cutting-edge technologies, which are essential for optimizing production processes and maintaining global competitiveness.

HEALTHCARE
AI and data analytics are transforming healthcare, enhancing diagnostics, treatment planning, and patient management. However, this revolution has created an urgent need for professionals skilled in these advanced technologies. The shortage is especially acute in roles focused on AI implementation and data analysis, critical for improving patient outcomes and operational efficiency in healthcare institutions.

SALES & MARKETING
Analyzing and leveraging data has become indispensable in a world dominated by data-driven strategies and AI-powered tools. Marketing professionals with technical skills in data analysis and AI are in high demand as companies seek to personalize customer experiences and optimize sales strategies. Those lacking these skills may struggle to compete in a marketplace increasingly driven by precision and efficiency.

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In-Demand Soft Skills Across Key Industries

In a recent study conducted by Emerging Strategy, we interviewed ten leading Learning and Development (L&D) experts and five well-reputed academics across key sectors such as IT, Finance, Energy, Logistics, and Healthcare. During these discussions, one of the academics emphasized the importance of having a solid foundation in mathematics, which is critical for data science, and highlighted that when these technical fundamentals are paired with the right mindset and soft skills, professionals are well-positioned to excel in their respective domains. This perspective reinforces the critical role that soft skills play in complementing technical expertise.

According to the L&D experts we interviewed, five soft skills stood out as vital in today's workforce. These skills are not just desirable—they are essential for navigating the complexities of today's rapidly evolving work environment:
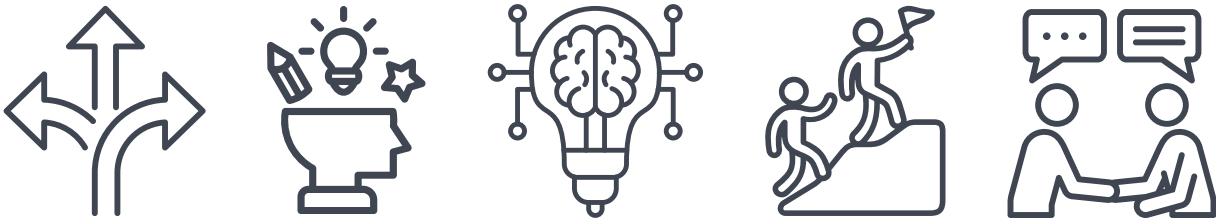
ADAPTABILITY & FLEXIBILITY
Adaptability emerged as the most frequently mentioned skill in our interviews, reflecting its importance in today's rapidly changing work environments. The ability to respond effectively to new challenges and evolving technologies is crucial. Flexibility in both approach and mindset is essential, particularly in industries where AI and automation continually redefine roles and tasks. For instance, a data analyst who can quickly learn new analytical tools and adjust to different data sources is invaluable in today's data-driven landscape.

CONTINUOUS LEARNING
With technology and industry standards evolving unprecedentedly, a mindset geared towards continuous learning is vital. Professionals must stay current with the latest developments and proactively acquire new skills. The experts we interviewed emphasized that individuals who regularly update their knowledge through courses and certifications are better equipped to navigate new challenges and remain competitive in their fields.

CREATIVE PROBLEM SOLVING
Innovation is deeply rooted in the ability to think creatively and develop new solutions to complex problems. Our research underscores the importance of creative problem-solving in driving technological advancements and maintaining a competitive edge. Engineers, for example, who devise novel ways to integrate AI into existing systems play a critical role in advancing technology and fostering innovation within their organizations.

LEADERSHIP & DECISION-MAKING
Effective leadership and decision-making are essential for guiding teams through change and uncertainty. Leaders who possess strong decision-making skills can navigate complex situations and align their teams with organizational goals. According to our study, project managers who make informed decisions under pressure ensure that projects meet deadlines and achieve their objectives.

COMMUNICATION & INTERPERSONAL SKILLS
Effective leadership and decision-making are essential for guiding teams through change and uncertainty. Leaders who possess strong decision-making skills can navigate complex situations and align their teams with organizational goals. According to our study, project managers who make informed decisions under pressure ensure that projects meet deadlines and achieve their objectives.

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In-Demand Hard Skills Across Key Industries

In the rapidly advancing world of AI and technology, hard skills have become indispensable for professionals performing specialized functions and driving innovation. These technical skills form the backbone of developing, implementing, and managing the complex systems and processes that keep organizations competitive in the digital age. Hard skills are particularly critical in fields where precise technical knowledge is essential to effectively meet industry demands and leverage emerging technologies.

While a strong foundation in the fundamentals—such as mathematics and data science—provides a critical starting point, mastering these hard skills allows professionals to fine-tune their expertise and stand out in their respective fields. Combined with the right soft skills, they create a powerful toolkit that positions workers for success in today's competitive job market. The following hard skills have been identified as crucial across various industries, enabling professionals to drive innovation and maintain a competitive edge:

DATA MANAGEMENT & ANALYTICS

Managing and analyzing large datasets is crucial in today's data-driven world. This encompasses skills in data mining, statistical analysis, and using advanced tools such as SQL, Python, and R to extract meaningful insights from data. Data scientists who can leverage machine learning algorithms to forecast trends and inform business decisions are pivotal in the finance and healthcare industries.

ENGINEERING & TECHNICAL DESIGN

Engineering roles require a deep understanding of technical principles, including Computer-Aided Design (CAD), materials science, and systems engineering. These skills are necessary for designing and implementing innovative aerospace, automotive, and construction solutions. Mechanical engineers who use CAD software to create more efficient machinery or civil engineers who apply materials science to develop sustainable infrastructure projects are at the forefront of advancing their fields.

OPERATIONS & SUPPLY CHAIN MANAGEMENT

Efficient operations and supply chain management demand proficiency in logistics, inventory management, and process optimization. Key hard skills in these areas include expertise in Enterprise Resource Planning (ERP) systems, Lean Six Sigma methodologies, and demand forecasting. Operations managers who streamline production processes using Lean principles or supply chain managers who optimize logistics networks to reduce costs and improve delivery times are instrumental in maintaining operational efficiency and competitiveness.

MANUFACTURING PROCESS CONTROL

Skills in manufacturing process control are vital for maintaining quality and efficiency in production environments. This includes proficiency in automation technologies, quality control systems, and lean manufacturing techniques. Production supervisors who implement automated systems to increase production accuracy or quality control engineers who develop testing protocols to ensure product consistency play crucial roles in ensuring the reliability and efficiency of manufacturing operations.

SALES ENGINEERING & TECHNICAL SALES

In technical sales roles, professionals must combine deep product knowledge with refined sales techniques to effectively communicate the value of complex products and solutions to customers. Essential skills in this area include product demonstration, technical proposal writing, and proficiency in Customer Relationship Management (CRM) systems. Sales engineers who tailor product demonstrations to meet specific client needs or craft compelling proposals highlighting their solutions' technical advantages are critical for sales and customer satisfaction.

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Assessing & Developing Key Skills

Assessing and developing soft and hard skills is crucial in today's rapidly evolving job market. While various methods exist, psychometric testing remains a cornerstone for evaluating personality traits, cognitive abilities, and emotional intelligence. This section explores the advantages and disadvantages of psychometric testing based on insights from our interviews with Learning and Development (L&D) professionals. It also outlines methods for assessing hard skills, focusing on upskilling opportunities.

PSYCHOMETRIC TESTING: EVALUATING SOFT SKILLS

Psychometric tests measure various psychological attributes, including personality traits, cognitive abilities, and emotional intelligence. Platforms like TestGorilla offer comprehensive assessments evaluating adaptability, communication, and problem-solving skills.

ADVANTAGES

- **Objectivity:** Psychometric tests objectively measure a candidate's attributes, reducing biases in traditional interviews. One L&D professional mentioned, "Psychometric tests offer a standardized way to evaluate skills and traits, which is crucial for making fair hiring decisions."
- **Comprehensive Evaluation:** These tests can assess a wide range of skills and traits relatively quickly, allowing employers to gain a holistic view of a candidate's abilities and potential fit for a role.
- **Predictive Validity:** Psychometric tests have demonstrated predictive solid validity in forecasting job performance. An L&D expert highlighted, "The predictive power of psychometric tests can help us identify candidates who are likely to succeed and thrive in our organization."

DISADVANTAGES

- **Cultural and Language Biases:** Despite their objective nature, psychometric tests can be biased against candidates from different cultural or linguistic backgrounds. One interviewee noted, "Psychometric tests are often designed with a specific population in mind, which can disadvantage those who don't fit that profile."
- **Limited Scope:** While psychometric tests offer valuable insights, they may not capture the full range of a candidate's abilities and potential. For instance, real-world problem-solving and creativity can be challenging to assess through standardized tests.
- **Over-Reliance on Tests:** There is a risk of relying too heavily on psychometric tests at the expense of other assessment methods. One L&D professional cautioned, "While useful, psychometric tests should be part of a broader assessment strategy that includes interviews, practical tasks, and other evaluations."

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ASSESSING HARD SKILLS: PRACTICAL METHODS

Assessing hard skills ensures that employees possess the technical proficiency to perform their roles effectively. Companies employ various methods to evaluate and develop these skills during the hiring process and for ongoing upskilling.

Pre-Interview Projects
Pre-interview projects allow candidates to demonstrate their technical skills in a practical context. These projects can range from coding tasks to data analysis assignments, clearly indicating the candidate's abilities.

Technical Interviews
Technical interviews involve questions and problems assessing a candidate's expertise in specific areas. These interviews often include live coding sessions, problem-solving exercises, and technical discussions to evaluate the depth of the candidate's knowledge.

Quizzes
Quizzes offer a quick and efficient way to assess a candidate's knowledge of specific subjects. They can test understanding of programming languages, software tools, or industry-specific knowledge, providing a baseline assessment of the candidate's technical skills.
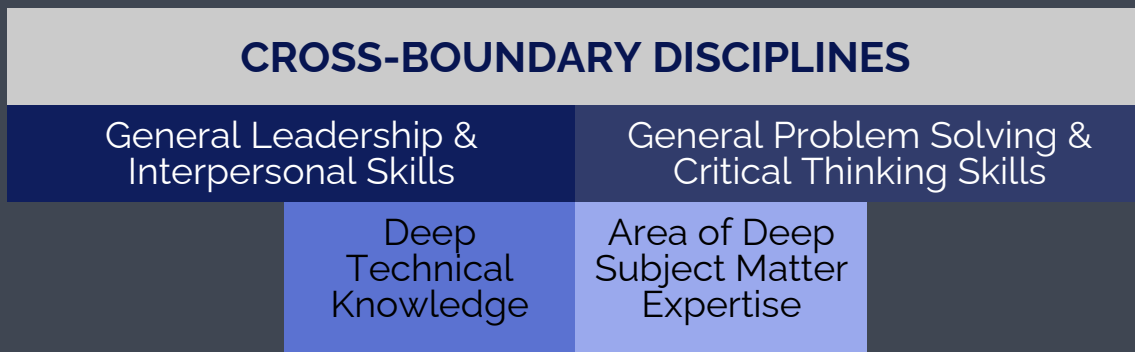
UPSKILLING: A STRATEGIC OPPORTUNITY

According to Emerging Strategy's patented research, upskilling is a highly lucrative and attractive market, projected to continue growing as organizations seek to enhance workforce capabilities and maintain a competitive edge. In our discussions with Learning and Development (L&D) professionals, several effective methods for upskilling emerged as particularly impactful. These methods include:

- **Assignments:** Practical assignments within courses require employees to apply what they have learned, reinforcing the material and measuring the employee's understanding and proficiency.
- **Feedback Surveys:** L&D professionals highlighted using surveys to gather feedback on course content and delivery, helping to identify improvement areas and gauge the training program's effectiveness.
- **Performance Improvements:** Companies are increasingly monitoring how employees apply their new skills to relevant tasks, tracking improvements such as increased efficiency, higher quality work, or the successful completion of more complex projects.

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Integrating Hard & Soft Skills:
A T-Shaped Approach

In today's dynamic work environment, combining deep technical expertise with a broad range of adaptable skills is becoming increasingly vital. This balance is encapsulated in the T-shaped skills model, a framework that emphasizes the importance of having both specialized knowledge and the ability to collaborate across various disciplines.

CROSS-BOUNDARY DISCIPLINES	
General Leadership & Interpersonal Skills	General Problem Solving & Critical Thinking Skills
Deep Technical Knowledge	Area of Deep Subject Matter Expertise

Source: PWC, 2019

The T-shaped skills model illustrates the need for professionals who are not only experts in their specific areas but also possess a wide array of transversal or soft skills. These two components are critical for thriving in modern, interdisciplinary work environments:

Vertical Bar **Depth of Knowledge**	**Horizontal Bar** **Breadth of Skills**
This represents deep technical expertise or specialized knowledge in a particular field or discipline. Individuals with a strong vertical component are highly skilled in their area of focus, enabling them to tackle complex problems and contribute significantly to their specific domain.	This represents a wide array of soft skills, such as communication, teamwork, problem-solving, and adaptability. This breadth allows individuals to collaborate effectively with others, understand different perspectives, and apply their expertise in various contexts.

The T-shaped model is increasingly relevant as organizations seek employees who can excel in specialized roles while also contributing to cross-functional projects. Employers value T-shaped individuals because they can work well in teams, adapt to changing circumstances, and contribute to innovation and problem-solving across disciplines.

The T-shaped model also encourages continuous learning and skill development. As the demands of the workplace evolve, professionals are urged to expand both their technical knowledge and soft skills throughout their careers. Organizations, in turn, are encouraged to provide training and development opportunities that foster both aspects of the T-shaped model.

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BUILDING A COHESIVE SKILL DEVELOPMENT STRATEGY

Our interviews with Learning and Development (L&D) professionals reveal that successful skill development programs often integrate hard and soft skills, reflecting the T-shaped model's principles. Companies typically employ a multi-vendor approach to achieve this integration effectively, ensuring that their employees receive comprehensive technical and interpersonal training. Companies use the following vendors for hard and soft skills training:

Hard Skills (Technical Abilities)

Platforms like Udemy, Coursera, and university workshops are commonly used to develop employees' technical skills. These platforms offer courses on programming, data analytics, AI, and other critical technical skills. Additionally, some companies support employees in pursuing part-time degrees to deepen their expertise.

Soft Skills (Interpersonal Abilities)

Companies turn to vendors like LinkedIn Learning to develop soft skills, which offers flexible learning paths tailored to individual needs. Training in soft skills often includes courses on communication, leadership, problem-solving, and adaptability.

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Highlighting Emerging Opportunities

As the global demand for skilled workers intensifies, significant opportunities are emerging for training providers to expand their offerings and address skill gaps in key markets. Below are some of the most promising areas to consider:

LOCAL OPPORTUNITIES IN THE U.S.

The United States remains a robust market for training providers, driven by its position as a leading global tech hub. This environment creates a substantial opportunity for upskilling providers who can bridge foundational mathematics and data science knowledge with critical AI applications. Providers offering comprehensive courses covering these fundamentals and their specific applications across critical industries— such as healthcare, finance, and technology—stand to gain significantly. For instance, organizations combining a deep understanding of data science with tailored AI solutions will find a receptive market among professionals seeking to stay at the forefront of technological advancements.

MARKET OPPORTUNITIES IN KEY ECONOMIES

Top 10 Countries for Skilled Talent Shortages
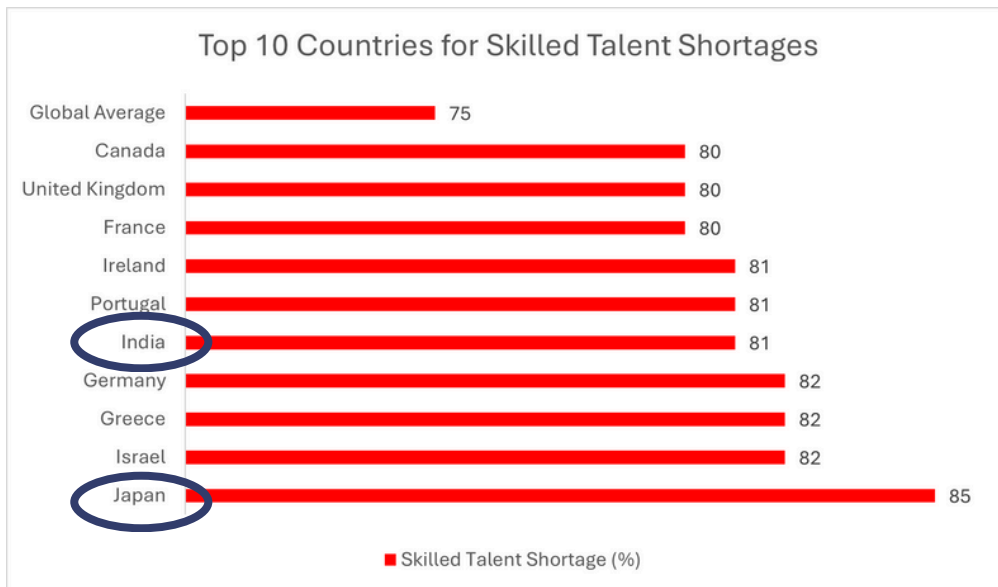
This chart highlights the top 10 countries facing the most significant skilled talent shortages, emphasizing the growing demand for targeted training programs in these regions. Among these, Japan and India stand out as key markets for training providers:

Japan

Japan ranks highest globally regarding its skills gap, making it a prime market for upskilling initiatives. This reflects a critical need for business English providers who can deliver language training and essential soft skills. With Japanese businesses increasingly focused on global competitiveness, there is a strong demand for training programs that integrate business English with communication, leadership, and problem-solving skills. Moreover, Japanese startups are leveraging emerging technologies such as large language models (LLMs) and AI avatars to create more interactive and personalized learning experiences, particularly in language education. Providers that offer a holistic approach, encompassing both language skills and a wide array of soft skills, are well-positioned to succeed in this market.

India

India presents vast opportunities for training providers, driven by its massive population and government initiatives on digital transformation. One of the world's largest and most rapidly evolving economies, India is seeing a growing need for soft skills training. This is evidenced by the involvement of leading HR firms such as SHRM in India, highlighting the importance of collaboration in designing and implementing training programs. Providers that focus on soft skills training —such as communication, teamwork, and adaptability—find significant opportunities to meet the needs of Indian businesses and professionals, aligning with national initiatives like "Digital India" and "Skill India."

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Building Strategic Partnerships

To capitalize on these emerging opportunities, training providers should consider forming strategic partnerships that enhance their ability to deliver comprehensive and relevant training programs in these key markets:

United States
Collaborating with leading tech companies and universities can help providers in the U.S. deliver advanced upskilling programs that combine fundamental math and data science with industry-specific AI applications. For example, partnerships between universities and tech giants could yield cutting-edge courses tailored to the needs of specific sectors.

Japan
Partnerships with local educational institutions and emerging tech startups can enhance business English and soft skills training delivery in Japan. Providers can integrate these technologies into their offerings by collaborating with organizations already leveraging LLMs and AI avatars for language education, making the learning experience more interactive and practical.

India
In India, working with government agencies and leading HR firms like SHRM can help providers develop and implement soft skills training programs that align with national digital initiatives. These partnerships will ensure that the training is relevant and impactful, meeting the evolving needs of the Indian workforce.

International Collaborations
Beyond these targeted partnerships, alliances with global organizations can help providers access new markets and share best practices. These collaborations can enhance the quality and relevance of training programs, ensuring they meet the specific demands of diverse markets.

Conclusion

The global talent shortage presents a multifaceted challenge that demands a strategic and comprehensive approach to developing hard and soft skills. The need for a skilled and adaptable workforce will only intensify as industries continue to evolve under the influence of AI and other emerging technologies. Addressing these skill gaps requires a focus on essential competencies, effective assessment methods, and identifying critical opportunities for training providers to significantly impact both domestically and internationally.

Training providers are uniquely positioned to play a pivotal role in addressing these skill shortages. By developing targeted programs and leveraging strategic partnerships with educational institutions, government agencies, industry leaders, and international organizations, providers can create robust training solutions that equip the workforce to meet future demands.

Moving forward, the focus on continuous learning and adaptability will be vital for maintaining a competitive edge in the global market. The potential for growth and innovation in the upskilling and reskilling space is immense. By embracing these challenges and capitalizing on emerging opportunities, training providers can transform the talent shortage into a powerful driver for advancement and success.

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About Emerging Strategy

[Emerging Strategy](#) is an award-winning global market intelligence and advisory firm specializing in providing unique solutions for particularly challenging environments, including both emerging and opaque markets. Our team of experts has successfully provided intelligence and advisory services in over 50 countries across six continents, earning us numerous accolades in the industry.

Established in 2006, we've maintained offices in Shanghai, Singapore, Washington DC, and Mexico City. Now, we've fully embraced remote work culture with a team of full-time professionals worldwide. Our team includes experts in business research, analysis, subject matter experts, account management, and more.

About the Author

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